



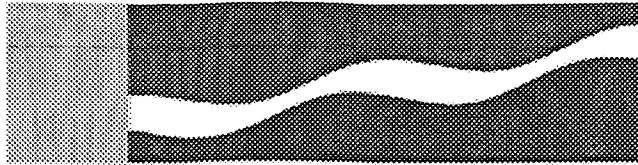
Electrical Mechanical Water Meters
5 Bunya Street Eagle Farm Q 4009
Ph. (07) 3403 1849
Fx. (07) 3403 1898

Brisbane Water Engineering Services

WACOL TO OXLEY

SECTION 1

1670 DIAMETER MSCL WATER MAIN



Electrical Mechanical Water Meters
5 Bunya Street Eagle Farm Q 4009
Ph. (07) 3403 1849
Fx. (07) 3403 1898

Brisbane Water Engineering Services

20 September 1996

OPERATING MANUAL FOR:

WACOL TO OXLEY

TRUNK MAINS

Section 1

CATHODIC PROTECTION SYSTEM

CLIENT:

**BRISBANE WATER.
WATER MAINTENANCE SECTION.**

MANUAL CONTENTS

- (1.0) Introduction
- (2.0) Corrosion and Cathodic Protection
- (3.0) Mains Details
- (4.0) Cathodic Protection
- (4.1) Type of System
- (4.2) Rectifier
- (4.3) Cathode
- (4.4) Anodes
- (4.5) Test Points
- (4.6) Associated Drawings
- (4.7) Associated Standards
- (4.8) Government Regulations
- (5.0) Performed Testing
- (6.0) Conclusion
- (7.0) Maintenance

DRAWINGS

486/6/25-AA1C0021E Standard Rectifier Wiring Diagram

(No Number) Monthly Maintenance Program

486/4/6-W7080GD TO

Logan City Trunk Main Amplification

-(1.0) **INTRODUCTION**

Steel when immersed or covered in water has a tendency to corrode (or rust) as the oxidized form is more stable than the metal.

Because of this, precaution must be taken to stop or minimize the corrosion reaction to an acceptable level consistent with the design life of the structure. This is normally achieved by the use of protective coatings which control the corrosion reaction by isolating the steel from its surrounding environment.

However, it is not practical to achieve a perfect coating and coating damage will always occur with time. Because of this, corrosion may occur at imperfections in the paint coating, causing further deterioration in the coating as well as loss of metal.

As a result of this, the coating defects must be rectified by periodic maintenance or an additional method of protection used to prevent this deterioration and corrosion occurring. This additional protection is achieved by the cathodic protection system.

(2.0) **CORROSION AND CATHODIC PROTECTION**

Corrosion is an electrochemical process in that it is accompanied by a flow of electrical current.

Corrosion occurs on the surface of metals at active areas known as anodes, which are electrically continuous with less active or passive areas known as cathodes. The electric current flows from the anode through the electrolyte to the cathode, with the circuit being completed by the electrical continuity between the cathode and anode. In practice anodes and cathodes are generally part of the same metallic surface and individual anodic areas may be small.

In applying cathodic protection and external current is applied to the surface so that the entire surface to be protected acts as a cathode. This involves the use of an auxiliary anode and when the current flow from this anode is sufficient, no part of the structure acts as an anode.

An external source of direct current such as a transformer rectifier is used in conjunction with an anode consisting of material with a very slow corrosion rate.

While it is the flow of current which achieves the cathodic protection of the surface it is impractical to measure these currents over individual anodic areas to determine when cathodic protection has been achieved. However, with the flow of cathodic protection current, the structure becomes more negative with respect to the surrounding electrolyte. Because of this, it is possible to state values of metal/electrolyte potential at which corrosion does not occur. This metal/electrolyte potential is generally measured against a standard reference electrode which allows a reproducible potential at which corrosion does not occur to be quoted.

(3.0) MAINS DETAILS

Size: Existing 600 and new 1670 Dia mild steel cement lined.

Note The new main is protected in parallel with Ducie st system and is controlled from the rectifier in Ducie st.

Coating: Tar Epoxy. /Fusion bonded polyethelene

Length: Appox 3.28 Km.

Location: Wacol Station rd to Bernoulli st Valve (A1277) 300M along Wolston rd (unformed)to (Valve A1292). Bernoulli st 10M from Archerfield rd

Construction.

Drawings:

486/4/6-W7080GD

486/4/6-W7101RC

DUCIE St. C.P. System

(4.0) CATHODIC PROTECTION DETAILS

- (4.1) Type of Cathodic Protection: Impressed Current.
- (4.2) Rectifier: Standard 25 Volt, 25 amp direct current output enclosed in a stainless steel switchboard. Rectifier has a 240V supply from Ducie st Electricity pole . The rectifier is located in Ducie st. In the park.
- (4.3) Cathode: The cathode point is located on the 600 Dia mains, 2M in front of the rectifier and on the 1670 Dia mains directly to the rear of the rectifier across the park next to Ebrington st. The cathode point is where the cabling from the rectifier is attached to the structure under cathodic protection.
- (4.4) Anodes: Two 1500 x 75mm silicone iron anodes were installed approximately 200 metres from the rectifier in the center of the park in a vertical bed. The anodes were firstly packaged with cokebreeze thereby improving anode – ground resistance. The anodes are identified by a marker label fixed to the distribution pit lid.
- (4.5) Test Points: Test points are installed on cathodically protected structures to enable testing to ensure full protection of the mains. On these mains eight test points have been installed and their locations can be identified from the layout drawing.
- (4.6) Associated Drawings:
Cathodic Protection Details – 2/14.213
Cathodic Protection Test Point Details – 2/14.199
Standard Rectifier Wiring Diagram – 486/6/25-AA1C0021E
Standard Vertical Groundbed Details – 486/6/25-AA1C0024E
- (4.7) Associated Standards:
AS 3000 1986 Australia Wiring Rules
AS 2832.1 1985 Pipes, Cables, Ducts, Guide to Cathodic Protection, Part One.
- (4.8) Government Regulations:
Queensland Electricity Acts and Regulations.

(5.0) PERFORMED TESTING

- (1) Natural Potential Survey.
- (2) Testing of Insulated Flanges, Joints.
- (3) Soil Resistance Testing.
- (4) Current Drain Survey.
- (5) Pipe Coating Anomaly Survey.
- (6) Rectifier Loop Resistance.
- (7) Foreign Structure Interference Survey and Mitigation.
- (8) Final Potential Survey and Commissioning.

(6.0) CONCLUSION

Full Cathodic protection has been achieved on this section of trunk mains. The cathodic protection system is registered with the Queensland Electricity Commission and has approval to operate.

(7.0) MAINTENANCE

The cathodic protection system is maintained on a monthly basis after commissioning. These checks involve testing rectifier operation and recording of pipe to soil potentials.

20 th September 1996.
Electrical Engineering Unit.
Cathodic Protection

CPS Monthly Maintenance Details.

Required:

- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.

Labour:

One tradesperson, one vehicle. 20 minutes per site.

Procedure:

- 1/ Identify installation.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Comments.
- 6/ Log entry.

20 th September 1996
Electrical Engineering Unit.
Cathodic Protection

CPS 6 Monthly Maintenance Details.

Required:

- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.
- 3/ Set of tools. (Electricians)
- 4/ Multimeter.
- 5/ DC clampmeter.
- 6/ Copper sulphate reference cell and leads.
- 7/ Cleaning equipment.
- 8/ Gatic cover lifters.

Labour:

One tradesperson electrical, one laborer, one vehicle.
Two hours per site.

Procedure:

- 1/ Identify system.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Record "on" potentials for all test points.
- 6/ Record "instant off" potentials for all test points.
- 7/ Record "off" potentials for all test points.
- 8/ Perform loop resistance and record.
- 9/ Check and record anode string currents.
- 10/ Comments.
- 11/ Log entry.

20 th September 1996
Electrical Engineering Unit.
Cathodic Protection

CPS 60 Monthly Maintenance Details.

Required:

- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.
- 3/ Set of tools. (Electricians)
- 4/ Multimeter.
- 5/ DC clampmeter.
- 6/ Copper sulphate reference cell and leads.
- 7/ Cleaning equipment.
- 8/ Gatic cover lifters.
- 9/ Rectifier load bank.
- 10/ PCS2000 Detection Equipment.

Labour:

One tradesperson electrical, one laborer, one vehicle.
Eight hours per site.

Procedure:

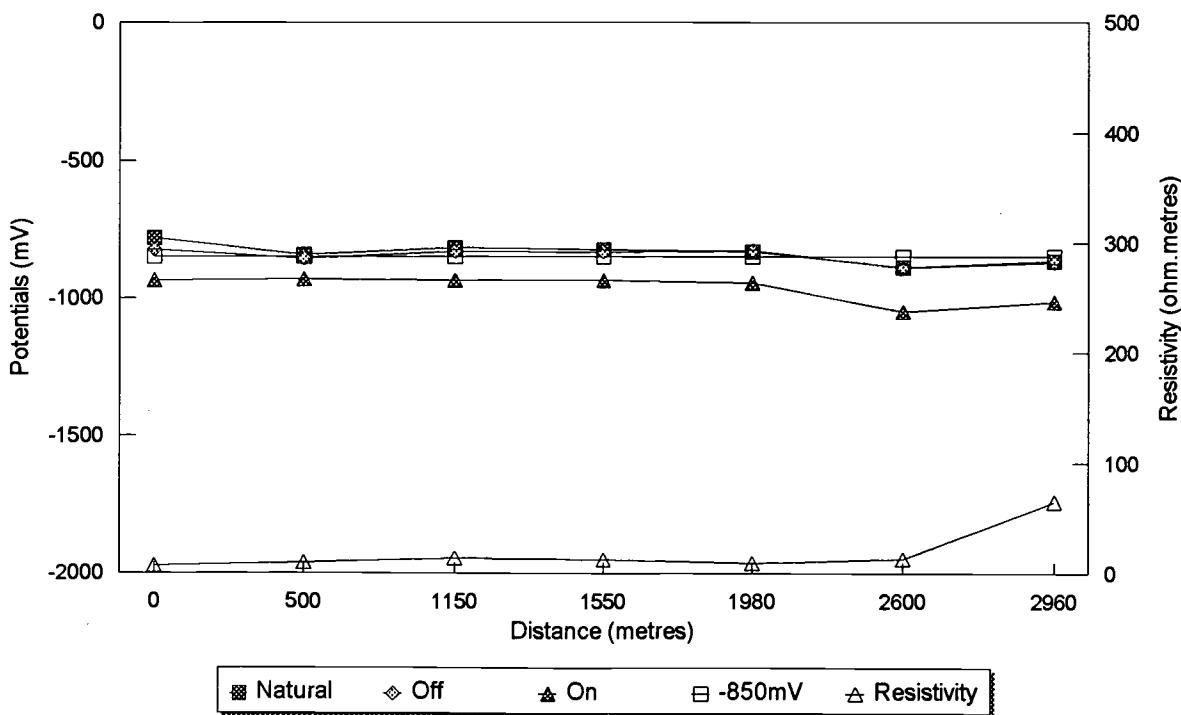
- 1/ Identify system.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Record "on" potentials for all test points.
- 6/ Record "instant off" potentials for all test points.
- 7/ Record "off" potentials for all test points.
- 8/ Perform loop resistance and record.
- 9/ Check and record anode string currents.
- 10/ Load test rectifier for 10 minutes.
- 11/ Check all switchboard and testpoint terminals for tightness.
- 12/ Check all switchboard and testpoints are labelled and I.D. tags attached.
- 13/ Check plans are correctly drawn and modify if necessary.
- 14/ Remove and inspect anodes.
- 15/ Recheck all interference (CPS) bleeds.
- 16/ Pipecamp structure if applicable.
- 17/ Apply for "continue to operate" permit if applicable.

Brisbane Water Engineering Services

CP Form No. 23

Electrical Engineering Unit**Cathodic Protection System Potential Recording Form****Project****Date**

Test Point number	Distances to T.P. (metres)	Potentials to CuSO ₄			Resistivities at 2 metres (ohm.metres)
		Natural (mV)	Off (mV)	On (mV)	
1	0	-783	-824	-936	6.5
2	500	-842	-857	-931	9.98
3	1150	-818	-831	-936	13.91
4	1550	-823	-833	-936	12.61
5	1980	-832	-828	-946	9.1
6	2600	-889	-890	-1049	13
7	2960	-866	-870	-1014	65
8	3280	-888	-891	-1004	52
9					
10					
11					
12					
13					
14					

Graph of potentials and resistivity vs pipelength**Rectifier located at 0M**

Brisbane Water Engineering Services**Electrical Engineering Unit**

Ph. 34031838 Fx. 34031839

5 Bunya Street
Eagle Farm Q 4009Cathodic Protection System Loop Resistance

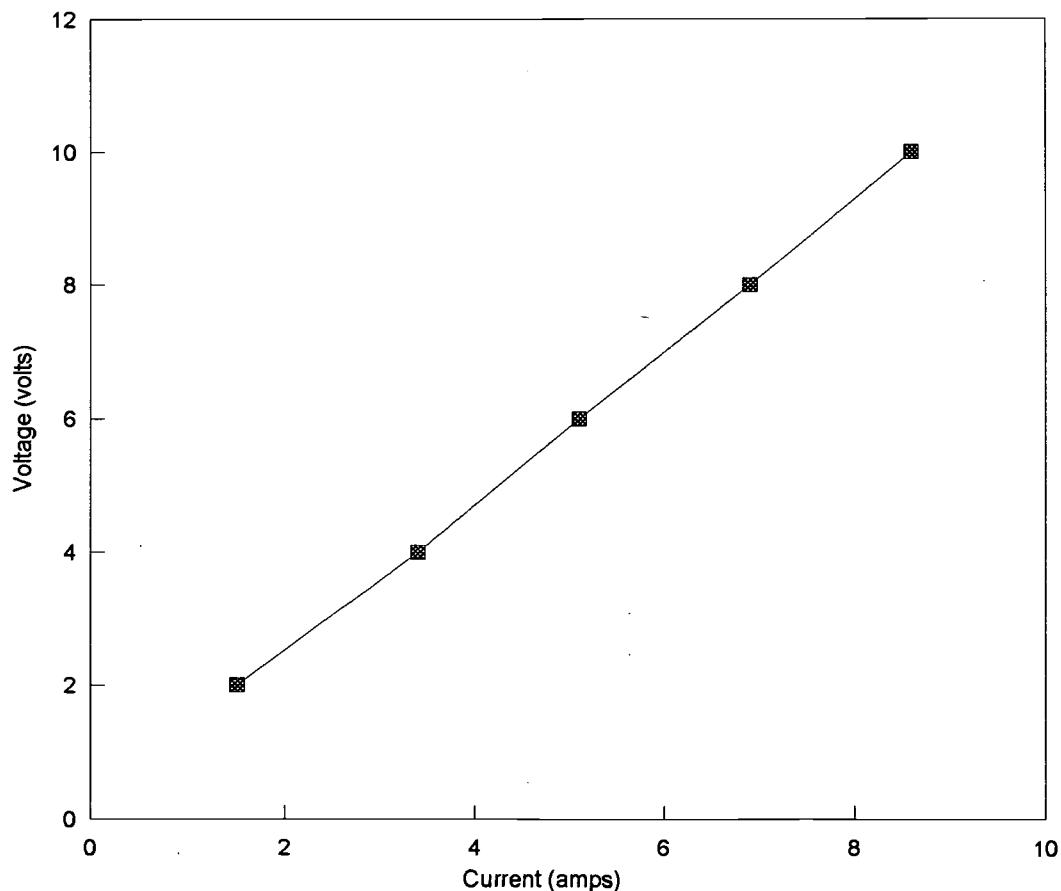
Date: 20 September 1996

Cathodic Protection System: Wacol to Oxley section 1

System Operating Volts: 7.9 System Operating amps 6

Test Voltage: (volts)	Test Current: (amps)
2	1.5
4	3.4
6	5.1
8	6.9
10	8.6

Loop Resistance (ohms)
1.142857

Graph of System voltage vs current.

Electrical Mechanical Water Meters
 5 Bunya Street Eagle Farm Q 4009
 Ph. (07) 3403 1849
 Fx. (07) 3403 1898

Brisbane Water Engineering Services

to:	Darryl Ringuet
-----	----------------

company/location:	SEQEB
-------------------	-------

fax no:	34075986
---------	----------

PHONE:	34075369
--------	----------

date:	11 Sept 1996
-------	--------------

re: Interference Test Results for WACOL Stn Rd WACOL to ARCHERFIELD Rd DARRA
--

message:

In relation to our phone conversation, following is the preliminary results of interference testing of our cathodic system to your structure.

If further on-site testing and / or witnessing of testing by you is required, please contact the undersigned to arrange those tests.

Could you please reply by FAX or LETTER of your acceptance of the above testing for our records.

YES I Accept the test data and have no objection to the system being licenced.

Signed by *D Ringuet* Date 24/9/96

NO I Require witness testing

Regards, John Taylor

Signed by Date. / /

Kerry Mc Govern
Electrical Supervisor

QE330/11/139

**COMMERCIAL AND CONSUMER
EXTERNAL PLANT TECHNOLOGY,
QLD.**

**144 ARTHUR ST
FORTITUDE VALLEY Q 4006**

Australia

11 September, 1996

**Telephone (07) 3838 0116
Message Bank
Facsimile (07) 3252 4664**

JS:AH DMES\DOCSITECHOFFS\JEFF\017

**MANAGER
DEPT OF WATER SUPPLY AND SEWERAGE
GPO BOX 1434
BRISBANE Q 4001**

(Attention Mr. M. Jukes)

Dear Sir

Interference tests were carried out on Telstra plant in the vicinity of your cathodic protection systems in the Duncie Street Reserve, Darr and the Oxley Golf Course on 4 and 9/9/96 in conjunction with Mr. John Taylor.

These tests showed 7 locations with potential change in excess of 10 milliVolts positive.

However, taking into account the effect of existing cathodic protection on Telstra plant and in accordance with the Electricity Act Sect. 198.(3), mitigation is not required at this time.

Please contact this office if you have any queries.

Yours faithfully

**Manager
External Plant Technology**

Facsimile



To JOHN TAYLOR
KERRY McGOVERN
From Trevor Hung

Facsimile 34031839 File

Company BCC Date 11-9-96

Location Total Pages 7

Distrib.

DUCIE SR - OXLEY GOLF COURSE UNITS
RESULTS OF INTERFERENCE TESTS
A LETTER SENT TO MIKE JUKES TODAY

REGARDS

Trevor

4-9-96
Darks #

Box 1003 - Rec Town Wyo.
Over to Chair 9V 8A.
Darks LHS Line Station Rd 836-844 8m
Distress Railway Rd
XBR

TP1 RHS Darks Stn Rd
m/n Dist Earnings.

TP2 LHS Darks Stn Rd
m/n 40m Dist ~~#~~

TP10 LHS Toscum Rd
m/n 10m dist Baricou
XBR

TP3 LHS Makoyat
m/n Dist Winslow

Boundary & Crossover Sec. A 18A
Waco
TP 20 RHS thickness 25m $\frac{3}{16}$ " .510 " $\frac{1}{2}$ "
mtr Dist Side Crossover 3m

TP 27 RHS Crossover Rd .490 " .490 " 1
mtr 40M # Side Government Rd
At Pinzaa

Showers.

TP26 HHS Boundary Disc
Carson.

M/H HHS Boundary

AT DA 93 N/A Mobil
S.O.E TRACOL

TP. HHS Boundary
M/H. ~~HHS~~ Boundary

1.204 11.65 36

M/H

1.20 " 18.

"

TP. 12 HHS Boundary to Disc Boundary

+

"

TP. 12 HHS Boundary to Disc Boundary

+

9-9-96 SOS.

Disc 12 S. Sec. 8A.

On Segs

Tomborres Hts

TP. 15 HHS Spine Disc 12
M/H Denver So

TP. 12 HHS Boundary to Disc Boundary
M/H 427 427 427
Nest P13. DA 34. HHS Watermain to 750' Tub 4
Xbh. 260 M Disc Boundary

Waco

TP. 6 HHS Watermain to Disc Boundary
Nest P13. DA 34. HHS Watermain to 750' Tub 4
Xbh. 260 M Disc Boundary

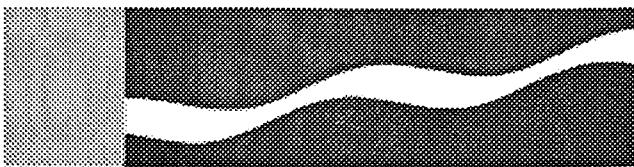
Side Wall to Attic 2421

TP. 6 HHS Watermain to Disc Boundary
Nest P13. DA 34. HHS Watermain to 750' Tub 4
Xbh. 260 M Disc Boundary

Side Wall to Attic 2421

- off on Sun's
- off on Sun's
- Dura TP23 LHS Boundary .766 .766 NW Dura
m/14 non Dist /ellikher
X BR
- Dura TP16 RHS Chokefield Tom .821 .821 NW TP20 RHS Boundary 4.
m/14 Dist French Rd
at DA.
- Tivita
~~TP29 RHS RUGYARD~~ .420 .420 NW
400 m ~~Government Rd~~
- Tivita
~~TP25 RHS Acreharts~~ .508 .508 6
m/14 m ~~at Government~~
- Tivita
TP21 RHS Acreharts .618 .618 NW
600 Dist MAGNOLIA
- Tivita
TP19 RHS Acreharts? .653 .653 NW
at Pine
- TP20 RHS Boundary 4. .902 .902 NW
m/14 Dist BENTON
- TP21 RHS Acreharts & 1057 1040 17
m/14 ~~RHS Boundary~~
- Sherwood
m/14 RHS Oxley off ~~TP20~~ 1:204 4
m/14
- Sherwood
TP24 RHS Oxley off 1008 1:196 8
m/14 Coop.
(new) Sher
TP25 RHS Oxley Rd 1304 1:296 8
m/14 at Roundabout. 84
LAWSON

TP16	RHS Boundary	4-9-96	BOS TESTS
m/H	Tom Hst Epswich Rd	5	805
	At DA.		
TP22	LHS Boundary 120m Dier.		
m/H	Ashfield Rd	TP15	RHS Boundary
		m/t	Dist Boundary
TP17	RHS Boundary 170m Dier.	TP16	RHS Boundary
m/H	Ashfield Rd	TP17	10m Dist HmBoundary
		AT DA24	
TP18	AHS Boundary	TP18	RHS Boundary 25m
m/H	25m opp # Acanthus	TP18	opp # Acanthus
	XBR	XBR	
TP11	RHS Epswich Rd	TP11	RHS Boundary
	15m Dist Acanthus	TP11	170m Dist Acanthus
	At Picnic DA13.		
TP22	RHS Boundary	TP22	RHS Boundary
m/H	120m Dist Ashfield	TP22	Ashfield



Electrical **Mechanical** **Water Meters**
5 Bunya Street Eagle Farm Q 4009
Ph. (07) 3403 1849
Fx. (07) 3403 1898

Brisbane Water Engineering Services

Fax transmission

to: Darryl Ringuet
company/location: SEQEB
fax no: 34075986
PHONE: 34075369

from: Kerry Mc Govern	
unit: Electrical Engineering Unit	
ph no: 34031838	fax no: (07) 3403 1839

date: 11 Sept 1996

no of pages: (including this page) Three

re: Interference Test Results for WACOL Stn Rd WACOL to ARCHERFIELD Rd DARRA

message:

In relation to our phone conversation, following is the preliminary results of interference testing of our cathodic system to your structure.

If further on-site testing and / or witnessing of testing by you is required, please contact the undersigned to arrange those tests.

Could you please reply by FAX or LETTER of your acceptance of the above testing for our records.

YES I Accept the test data and have no objection to the system being licenced.

Signed by Date. / /

NO I Require witness testing

Signed by Date. / /

Regards, John Taylor

Kerry Mc Govern
Electrical Supervisor

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley..... Unit Reading 9.5V 8Amps Date 28-8-96

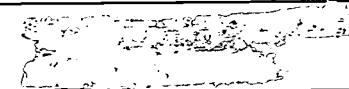
	Reading	Test Point I. D.	Location	Swing
On	-532	MEN.	12 Himalaya st Pole 28203	-10
Off	-522			
On	-626	MEN	cnr stratheden Ipswich Rds Pole 37581	+1
Off	-627			
On	-640	MEN	OPP 40 EBERINGTON Pole 62141	-21
Off	-619			
On	-473	MEN	Archerfield Rd. Pole 23085	+6
Off	-479			
On	-428	MEN	Archerfield Rd. Pole 23086	+9
Off	-437			
On	-598	MEN	Archerfield Rd. Pole 23087 A/B	00
Off	-598			
On	-444	LT Pole	Bernoulie ST light Pole 372537	00
Off	-444			
On	-748	LT Pole	Bernoulie ST Pole 372538	-6
Off	-742			
On	-368	HT Tower	Park @ DUCIE ST. (7198) Centenary Hng	-1
Off	-367			
On	-356	HT Tower	Park @ DUCIE ST 707 Centenary Hng	-1
Off	-355			
On	-433	HT Tower	Warrendale ST 7198	-6
Off	-427			
On	-470	HT Tower	Warrendale ST 707	-4
Off	-466			
On	-481	MEN	61 Harrington Pole 7184	-8
Off	-473			
On	-396	MEN	87 DUCIE ST Pole	-3
Off	-393			
On	-425	MEN.	95 Strathaird.	00
Off	-425			

TESTED BY J Taylor

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley..... Unit Reading 9.5 V 8 Amps Date 19-8-96

	Reading	Test Point I. D.	Location	Swing
On	-332	MEN	Cnr Ipswich, Servis Sts Transformer Pole	-14
Off	-318			
On	-358	MEN	67 Strathaird. ST Transformer Pole	-3
Off	-355			
On	-408	MEN	Strathaird st Pole 19364	-5
Off	-403			
On	-426	MEN	Strathnaver st Pole 62143	-13
Off	-413			
On	-900	MEN	Sanananda St Pole 62289	+1
Off	-901			
On	-			-
Off	-			
On	-893	MEN	Sanananda st 62288	00
Off	-893			
On	-421	MEN	Sanananda Pole 32158	+2
Off	-423			
On	-389	LT Pole	Sanananda	
Off	-390		Pole 371272	+1
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				

TESTED BY *J Taylor*

LAST TRANSMISSION REPORT

Tr. No.	Type	Doc. R.	Destination ID	Date/Time	Durat.	Page	Result
0044	TX	ADF	61 7 2676228	11/09 '96 08:02	02:31	03	OK

Brisbane Water Engineering Services

CP Form No.26

Electrical Engineering Unit**Cathodic Protection System General Information Form**Project Wacol to Oxley Sect.1Date 30-7-96LOCATION OF RECTIFIERSHARED with 600 TM.

NUMBER & STREET NAME:

Ducie St Park opp Stratheden

SUBURB:

Darra 197 R 16

POSTCODE:

4076

UBD MAP REFERENCE:

197 R 16SYSTEM INFORMATION:

INSTALLATION PROTECTED:

1670

DIAMETER of MAIN in mm:

4,000

LENGTH of MAIN in metres:

Medium Density Fusion bond Polyethylene

COATING on MAIN:

Fresh Water

PRODUCT CARRIED:

1996

YEAR MAIN INSTALLED:

From ~~Wilson~~ Wacol stn Rd
Wacol 197 E 15

INSTALLATION EXTREMITIES:

To Bernoulie St Archerfield Rd.
198 B 19.

CPS NUMBER:

DATE C.P. COMMISSIONED:

DRAWING NUMBER:

H.V. LINE CROSSINGS:

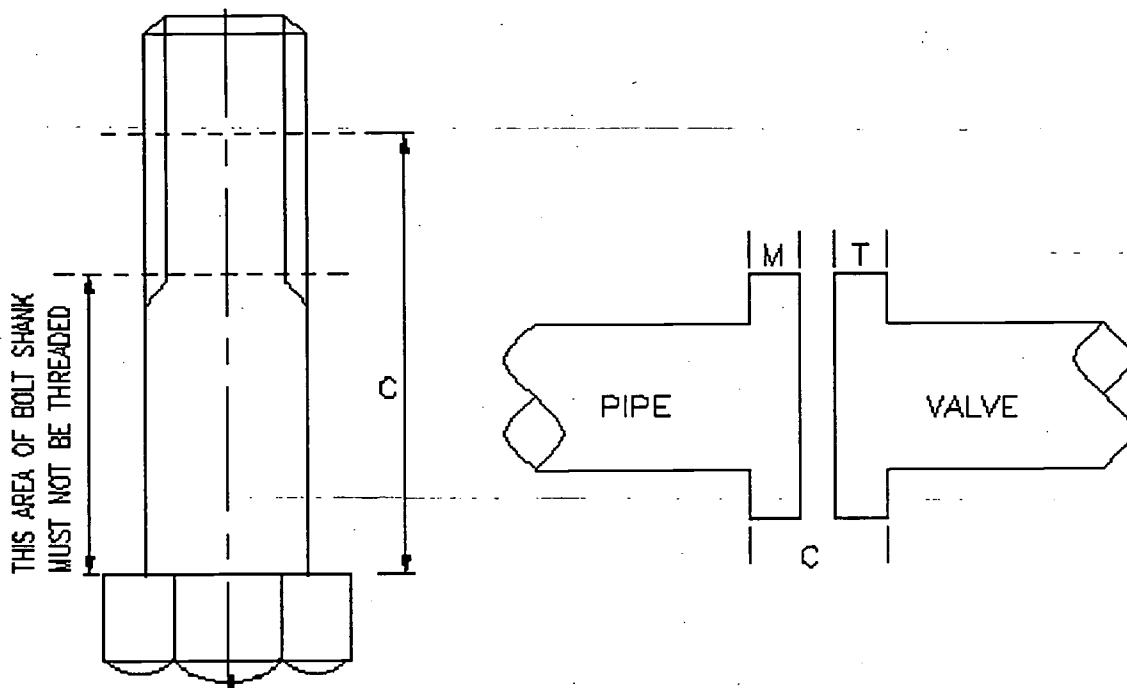
FOREIGN STRUCTURES in AREA:

GasH.V. 110 kV SEQEB Line
Telecom

COMPILED BY

Brisbane Water Engineering Services

CP Form No. 22

Electrical Engineering Unit**Insulated Bolt Details Form**Project Wacol to OxleyValve No. TP 8 1670 Pipe 1286Date 30-7-96

M	50
T	50
C	3
Diameter of Bolt	32
Diameter of Flange Hole	35
No. of Bolts per Flange	32
Total No. Bolts	64
Total No. Mylar Washers	120

M = Thickness of Mild Steel Flange

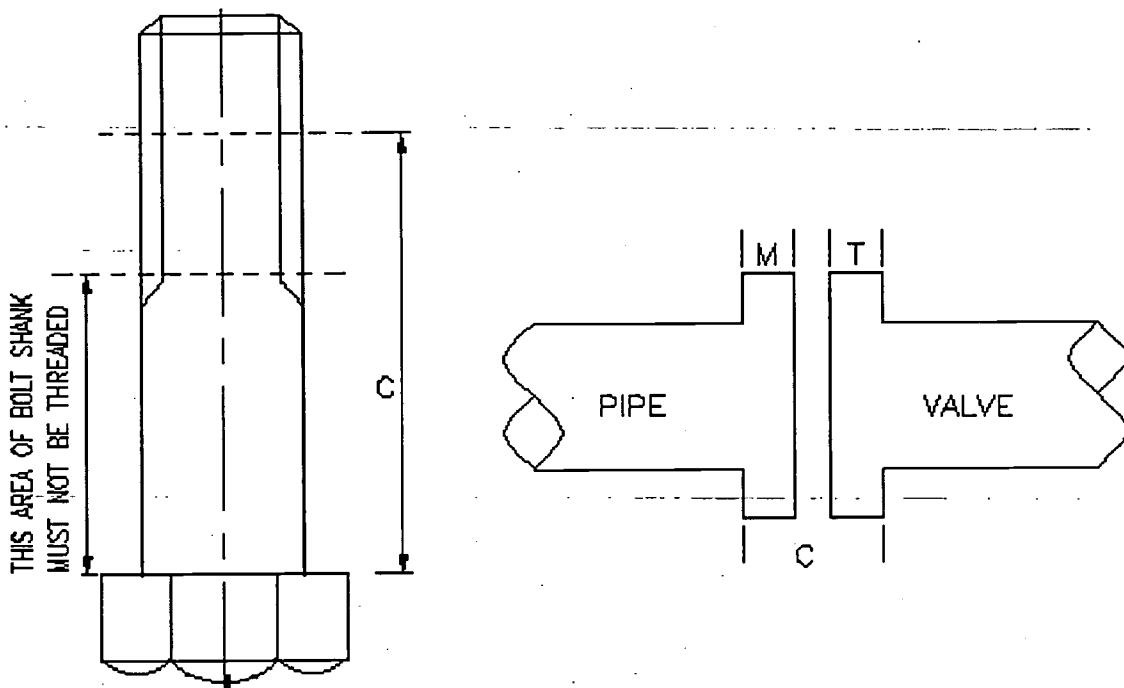
T = Thickness of Valve Flange

C = Length of Sleeving or Coating

CHECKED BY JJ

Brisbane Water Engineering Services

CP Form No. 22

Electrical Engineering Unit**Insulated Bolt Details Form**Project Wacol to OxleyValve No. TP 1. A 1277Date 30 - 7 - 96

M	50 mm
T	50 mm
C	3 mm
Diameter of Bolt	32 mm
Diameter of Flange Hole	35 mm
No. of Bolts per Flange	32 mm
Total No. Bolts	64.
Total No. Mylar Washers	120

M = Thickness of Mild Steel Flange

T = Thickness of Valve Flange

C = Length of Sleeving or Coating

CHECKED BY J.T.

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1.Unit Reading 7.9 V 6 ADate 28-8-96

	Reading	Test Point I. D.	Location	Swing
On	-525	FH	14 Himalaya St	-14
Off	-511		"	
On	-514	Water Meter	opp 12. "	+7
Off	-521		"	
On	-532	MEN	"	-10
Off	-522		Pole 28203	
On	-552	Fence 1	Seg eb Sub stn Himalaya. st	-9
Off	-543		"	
On	-567	Fence 2	" " "	-2
Off	-565		" " "	
On	-491	Water Meter	13 Himalaya ST	+1
Off	-492		"	
On	-442	Fence	9/7 " "	+3
Off	-445		" "	
On	-465	Fence	7 " "	-10
Off	-455		" "	
On	-524	Fence	24 Eberington	-3
Off	-521		"	
On	-570	Water Meter	" "	-18
Off	-552		" "	
On	-537	Water Meter	20 " "	-16
Off	-521		" "	
On	-526	Water Meter	16 " "	+1
Off	-527		" "	
On	-579	Water Meter	14 " "	-12
Off	-567		" "	
On	-579	FH	" "	+1
Off	-580		" "	
On				
Off				

TESTED BY J. T.

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1 Unit Reading 7.9 Volts 6 Amp Date 28-8-96

	Reading	Test Point I. D.	Location	Swing
On	-283	Retic Valve	cnr Stratheden Ebrington	+6
Off	-289		" "	00
On	-107	water Meter	" "	00
Off	-107		cnr Stratheden Ipswich	00
On	-474	Water Meter	" "	00
Off	-474		Pole 37581	-1
On	-424	FH	" "	-1
Off	-423		" "	00
On	-626	MEN	" "	+1
Off	-627		cnr Stratheden Eberington	-1
On	-222	Retic Valve	9 Stratheden	-3
Off	-221		Eberington 40/42	+1
On	-185	Water Meter	40 " "	+5
Off	-182		40/38 "	-4
On	-184	FH	OPP40 " "	-21
Off	-185		Pole 62141	00
On	-103	Water Meter	36 "	-39
Off	-108		32 "	-2
On	-558	Fence		
Off	-554			
On	-640	MEN		
Off	-619			
On	-609	Water Meter		
Off	-570			
On	-456	FH		
Off	-454			
On				
Off				
On				
Off				

TESTED BY JJ

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1.Unit Reading 7.9V 6ADate 27-8-96

	Reading	Test Point I. D.	Location	Swing
On	-605	Fence	Soccer Ground Cnr Ipswich Archerfield.	-5
Off	-600			
On	-477	Light Pole	NW. " "	00
Off	-477			
On	-465	Light Pole	SW " "	-2
Off	-463			
On	-433	Property Pole	" "	00
Off	-433			
On	-511	Light Pole	SE " "	+5
Off	-516			
On	-316	Water Pipe		00
Off	-316			
On	-473	MEN	Archerfield Rd. Pole 23085 ABx1883	+6
Off	-479			
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				

TESTED BY *J. T.*

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1Unit Reading 7.9V 6ADate 23.8.96

	Reading	Test Point I. D.	Location	Swing
On	-531	Fence	Transformer Marker Archerfield/Boundary	00
Off	-531			
On	-428	MEN	Archerfield Rd. Pole 23086	+9
Off	-437			
On	-491	FH	" "	+1
Off	-492			
On	-598	MEN	" " A/B Pole 23087	00
Off	-598			
On	-444	Light Pole	Bernoulie St 372537 Pole	00
Off	-444			
On	-748	Light Pole	" " 372538 Pole	-6
Off	-742			
On	-687	Fence	P&O Catering	+6
Off	-693			
On	-605	Retic Valve	" "	00
Off	-605			
On	-596	Fence	Archimedes and Bernoulie St	+1
Off	-597			
On	-557	FH	"	00
Off	-557			
On	-552	Retic Valve	Pacific Rim Archimedes	+1
Off	-553			
On	-515	FH	" "	+1
Off	-516			
On	-407	Frame	Sub 12. Seqeb Archimedes	00
Off	-407			
On	-605	Fence	Thrifty Hire Cnr Ipswich / Archimedes	-5
Off	-600			
On				
Off				

TESTED BY J. J.

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1 Unit Reading 7.9V 6A Date 22.8.96

	Reading	Test Point I. D.	Location	Swing
On	-455	EXT	Park @ end of Ducie ST.	
Off	-464	HWS		+9
On	-344	Leg 707	Seqeb HT Tower in Park, near Ipswich Rd	+1
Off	-345			
On	-368	Leg 7198	" "	-1
Off	-367			
On	-353	Leg 7198 Rear	" "	-1
Off	-352			
On	-356	Leg 707 Rear	" "	-1
Off	-355			
On	-473	Leg 167	Seqeb HT Tower in Park near Rail line	-4
Off	-469			
On	-381	Leg 7198	" "	-5
Off	-376			
On	-470	Leg 167 Rear	" "	-4
Off	-466			
On	-433	Leg 7198 Rear	" "	-6
Off	-427			
On	-760	Railing	Railing front of club hse Nth end.	+1
Off	-761			
On	-30	Irrigation Pipe	between small and Large Goal Posts	00
Off	-30			
On	-860	Goal Posts	Small Posts direct and Loose in Ground.	+1
Off	-861			
On	-882	Goal Posts	Large @ Nth end.	00
Off	-882			
On				
Off				
On				
Off				

TESTED BY JJ

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit**Cathodic Protection Interference Survey Results Form**Project Wacol to Oxley Sect 1Unit Reading 7.9 V 6 A.Date 21.8.96

	Reading	Test Point I. D.	Location	Swing
On	-553	Water Meter	74 Station Rd.	-3
Off	-550			
On	-503	Retic Valve	Cnr Harington and Station Rd.	00
Off	-503			
On	-426	Water Meter	10 Harington	00
Off	-426			
On	-405	FH	20 "	-2
Off	-403			
On	-359	Water Meter	" "	00
Off	-359			
On	-713	Fence	28/24 "	+1
Off	-714			
On	-463	Water Meter	32. "	-4
Off	-459			
On	-416	FH	" "	-1
Off	-415			
On	-488	Water Meter	40 "	-3
Off	-485			
On	-436	FH	48 "	00
Off	-436			
On	-394	Water Meter	Park @ end of Ducie St	+1
Off	-395			
On	-826	Fence	@ water Meter	-1
Off	-825			
On	-435	Power Board Earth	Park.	+4
Off	-439			
On	-42	Earth Stake	Toilet Block	00
Off	-42			
On	-469	Tap	club House	+8
Off	457			

TESTED BY J.S.

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit**Cathodic Protection Interference Survey Results Form**

Project Wacol to Oxley Sect. 1

Unit Reading 7.9 V. 6A

Date 20.8.96

	Reading	Test Point I. D.	Location	Swing
On	-384	Water Meter	68 Harrington	00
Off	-384		" "	
On	-395	FH	64 "	00
Off	-395		" "	
On	-481	MEN 7184	61 "	-8
Off	-473		" "	
On	-460	Water Meter	Cnr Stratheden and Harrington	-8
Off	-452		" "	
On	-332	Water Meter	43 Ducie St	+3
Off	-335		" "	
On	-323	FH	" "	00
Off	-323		" "	
On	-528	Water Meter	37 "	-13
Off	-505		" "	
On	-511	Water Meter	29 "	-8
Off	-503		" "	
On	-496	FH	27 "	00
Off	-496		" "	
On	-124	Fence	21/19 "	-1
Off	-123		" "	
On	-400	Water Meter	19 "	00
Off	-400		" "	
On	-520	Fence	17	+1
Off	-519		" "	
On	-395	Water Meter	Cnr Station Rd Ducie	+1
Off	-396		" "	
On	-520	FH	" " "	00
Off	-520		" "	
On	-627	Fence	66/70 Station Rd.	+3
Off	-630		" "	

TESTED BY J T

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1 Unit Reading 7.9 V. 6A. Date 19-8-96

	Reading	Test Point I.D.	Location	Swing
On	-639	Fence	85/87 Ducie St	-6
Off	-633		"	
On	-447	Water Meter	87 "	-9
Off	-438		"	
On	-396	MEN Pole	" "	-3
Off	-393		" "	
On	-424	Water Meter	97 "	-4
Off	-420		" "	
On	-618	Fence	Cnr Strathaird/Ducie	00
Off	-618		"	
On	-407	Water Meter	95 Strathaird.	00
Off	-407		"	
On	-425	MEN A/B	" "	00
Off	-425		" "	
On	-427	Valve Retic	Cnr Strathaird. and Harington	06
Off	-427		"	
On	-442	Water Meter	96 Harington	00
Off	-442		"	
On	-536	FH	92 "	00
Off	-536		"	
On	-626	Fence	84 "	+7
Off	-633		" "	
On	-463	Water Meter	" "	00
Off	-463		" "	
On	-488	Water Meter	76 "	00
Off	-488		" "	
On	-463	FH	" "	00
Off	-463		" "	
On	-473	Fence	76/74 "	+6
Off	-479		" "	

TESTED BY *JJ*

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit**Cathodic Protection Interference Survey Results Form**Project Wacol to Oxley Sect. 1. Unit Reading 7.9V 6A Date 19-8-96

	Reading	Test Point I.D.	Location	Swing
On	-753	Fence	26/24 Jervis St	+1
Off	-754		" "	
On	-309	FH	18 "	00
Off	-309		" "	
On	-325	Water Meter	" "	-1
Off	-324		" "	
On	-363	Water Meter	cnr Ipswich/Service	-12.
Off	-351		" "	
On	-333	FH	" " "	00
Off	-333		" "	
On	-332	MEN	" " "	
Off	-318		Power Pole	-14
On	-24	Water Meter	5 Park Jervis St	-2.
Off	-22		" "	
On	-505	MEN	Ducie St Pole 1309. Supply Rect.	-28
Off	-477		" "	
On	-588	Fence	51 Ducie St	-1
Off	-587		" "	
On	-564	Water Meter	" "	00
Off	-564		" "	
On	-378	FH	59 "	00
Off	-378		" "	
On	-486	Water Meter	63 "	00
Off	-486		" "	
On	-475	FH	75 "	00
Off	-475		" "	
On	-485	Water Meter	" "	00
Off	-485		" "	
On	-509	Fence	75/79 "	-17
Off	-492		" "	

TESTED BY JJ

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1 Unit Reading 7.9 V 6A. Date 19-8-96

	Reading	Test Point I. D.	Location	Swing
On	-358	MEN	67 Strathaird St Power Pole	-3
Off	-355			
On	-408	MEN	cnr Strathnaver St Strathaird Pole 19364	-5
Off	-403			
On	-478	FH	"	+1
Off	-479			
On	-376	Water Meter	77 strathnaver St	00
Off	-376			
On	-426	MEN	Pole 62143 "	-13
Off	-413			
On	-769	Fence	75/69. Strathnaven St	-2
Off	-767			
On	-460	FH	69 "	00
Off	-460			
On	-462	Water Meter	"	+1
Off	-463			
On	-568	Retic Valve	cnr Jervis and Strathnaver Sts	00
Off	-568			
On	-366	FH	"	+1
Off	-367			
On	-265	Water Meter	48 Jervis St.	-3
Off	-262			
On	-459	"	42 "	+1
Off	-460			
On	-527	Fence	40/36 "	-6
Off	-521			
On	-433	Water Meter	36 "	-42
Off	-391			
On	-432	Water Meter	28 "	-30
Off	-402			

TESTED BY *JJ*

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1 Unit Reading 6 Amps Date 28-8-96

	Reading	Test Point I. D.	Location	Swing
On	-620	Steel Post	Park Sanananda St	
Off	-620		Basket Ball Court	00
On	-785	valve	opp Pole 61318	
Off	-505		Sanananda St	-280
On	-900	MEN	Pole 62289. Rail X.	
Off	-901		Sanananda St	+1
On	-893	MEN	Pole 62288 Forest	00
Off	-893			
On	-649	MEN	Power Pole Forge cl	
Off	-649			60
On	-625	Earth Stake	BMX TRACK	
Off	-627		Forge close	+2
On	-471	Water Pipe	"	
Off	-471			00
On	-651	Judges Stand	"	
Off	-651			00
On	-361	Eating Stand	"	
Off	-361			00
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				

TESTED BY J. T.

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit**Cathodic Protection Interference Survey Results Form**

Project Wacol to Oxley Sect 1 Unit Reading 6Amps Date 28-8-96

	Reading	Test Point I.D.	Location	Swing
On	-34	Fence	Sanananda st. Sewerage P/stn.	00
Off	-34		"	
On	+548	Tap	Air breaker Pole 61843	+1
Off	-549		"	
On	-415	MEN	Air breaker Pole 61843	00
Off	-415		"	
On	-462	Pipe	Pipe across Creek Sanananda St. 3500	00
Off	-462		"	
On	-686	Fence	Cnr Markham & Sanananda st.	00
Off	-686		"	
On	-363	FH	"	00
Off	-363		"	
On	-354	water meter	54 Sanananda St	00
Off	-354		"	
On	-484	"	46 "	00
Off	-484		"	
On	-656	Fence	46 "	00
Off	-656		"	
On	-349	water meter	44 "	00
Off	-349		"	
On	-122	water meter	32 "	00
Off	-122		"	
On	-265	water meter	18 "	00
Off	-265		"	
On	-421	MEN DRA9	Cnr Ipswich and Sanananda Pole 32158	+2
Off	-423		"	
On	-389	Lt Pole 371272	Cnr Ipswich and Sanananda 371272	+1
Off	-390		"	
On	-405	Shelta	Bus Stop opp 18 Sanananda St	00
Off	-405		"	

TESTED BY J T

Brisbane Water Engineering Services

CP Form No. 21

Electrical Engineering Unit**Insulated Joint Testing Details Form**Project Wacol to Oxley Sect 1Date 30-7-96**DESCRIPTION****MAINS DETAILS:**

LOCATIONS:

Wacol Stn Rd. F 15 UBD

SIZE:

1670

MATERIAL:

M S CL

COATING:

Medium density Fusion bonded Polyethylene

VALVE NO.

A 1277**IN GROUND TESTING** PITFlange A upstreamBOLT TO FLANGE RESISTANCE: > 200 ΩsNUMBER OF BOLT: 32FLANGE TO FLANGE RESISTANCE: 60 Ωs.

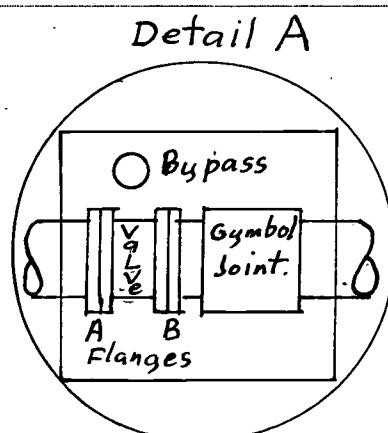
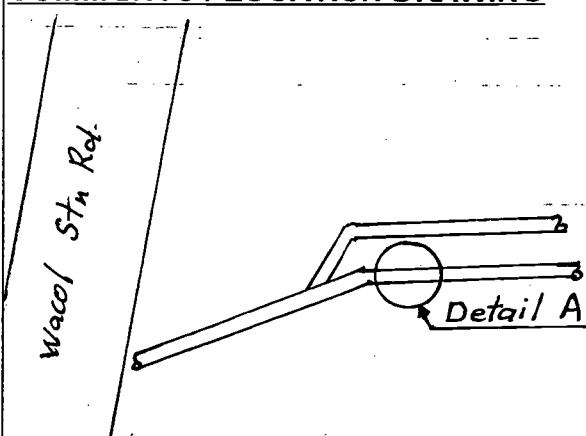
INSULATION CHECKER MODEL 702:

POTENTIAL DIFFERENCE TO REFERENCE CELL:PROTECTED SIDE: -1387 To Cu CuSO₄ CellUNPROTECTED SIDE: -1343 To Cu SO₄ Cell**ABOVE TESTING**

BOLT TO FLANGE RESISTANCE:

NUMBER OF BOLTS:

FLANGE TO FLANGE RESISTANCE:

COMMENTS / LOCATION DRAWINGTESTED BY J.J.

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**Project Wacol to Oxley Sect 1Date 30-7-96TP Location Wolston Rd 197 F15TP No. 1Mains Size 1670 msclTP Type B.t.B.**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+151CuSo₄ REFERENCE TO PIPE-972ZINC TO CuSo₄-1120**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

6.5 ohm mtr

MEGGER READING

.5TEST NO 2

PIN SPACING

RESISTIVITY

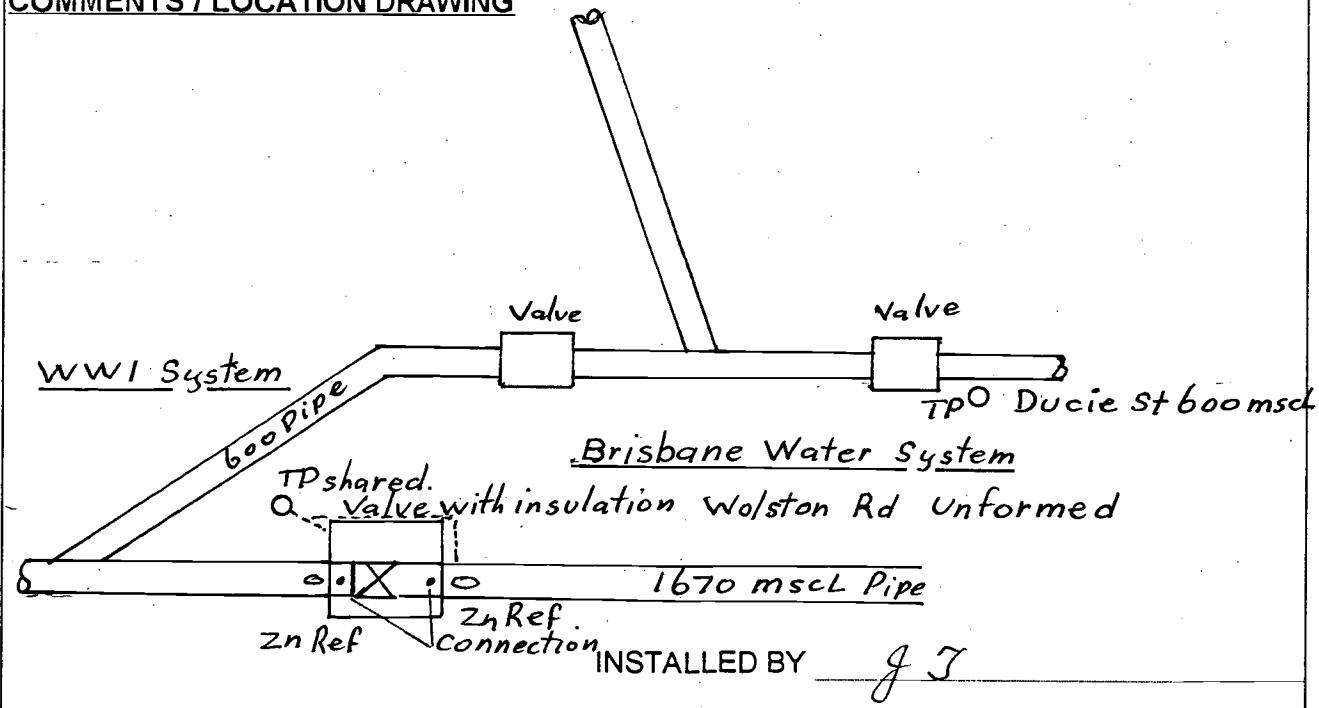
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**Project Wacol to Oxley Sect 1Date 30-7-96TP Location Wolston Rd 197 J 15TP No. 2Mains Size 1670 msclTP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+220CuSo₄ REFERENCE TO PIPE-842ZINC TO CuSo₄-1064**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

MEGGER READING

.769.5 ohm mtrTEST NO 2

PIN SPACING

RESISTIVITY

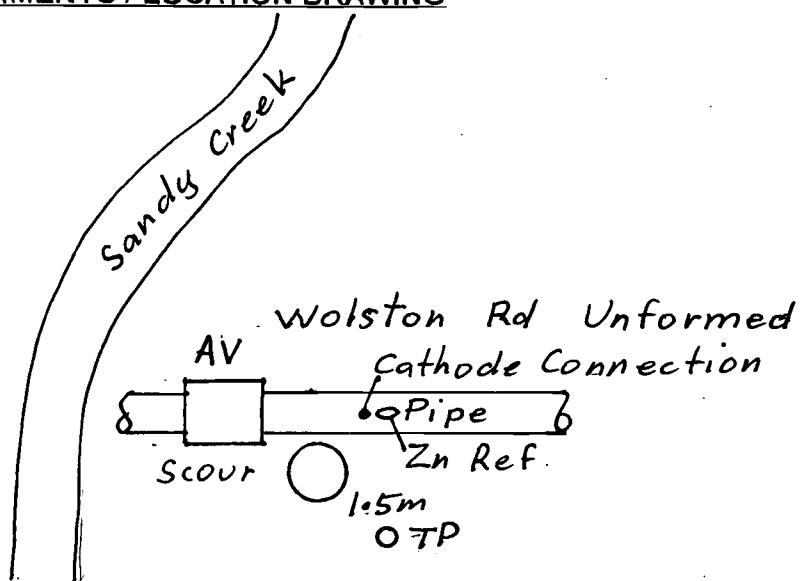
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

INSTALLED BY

JJ

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**Project Wacol to Oxley Sect 1Date 30-7-96TP Location Wolston Rd 197 m 16TP No. 3Mains Size 1670 msclTP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+344CuSo₄ REFERENCE TO PIPE-818ZINC TO CuSo₄-1163**EARTH TESTING**TEST NO. 1

PIN SPACING

2RESISTIVITY 14 ohm mtr

MEGGER READING

1.07TEST NO 2

PIN SPACING

RESISTIVITY

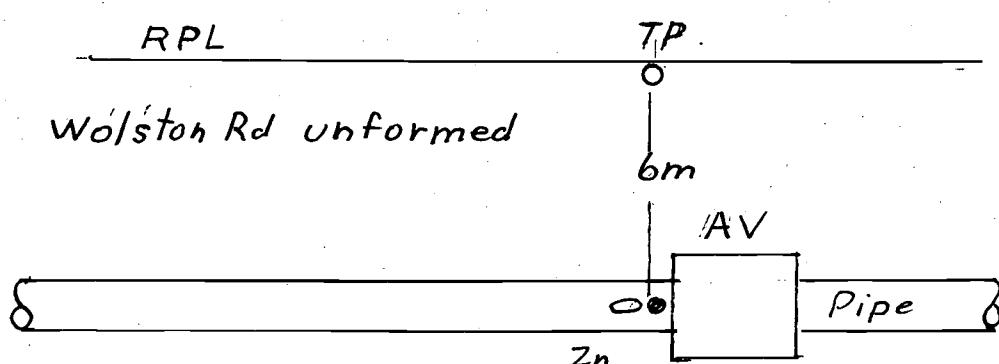
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

INSTALLED BY

JJ

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**Project Wacol to Oxley Sect. 1Date 30-7-96TP Location Sanananda St 197 N/16TP No. 4Mains Size 1670 mscfTP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+ 317CuSo₄ REFERENCE TO PIPE- 823ZINC TO CuSo₄- 1140**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

12.6 ohm mtr.

MEGGER READING

.97TEST NO 2

PIN SPACING

RESISTIVITY

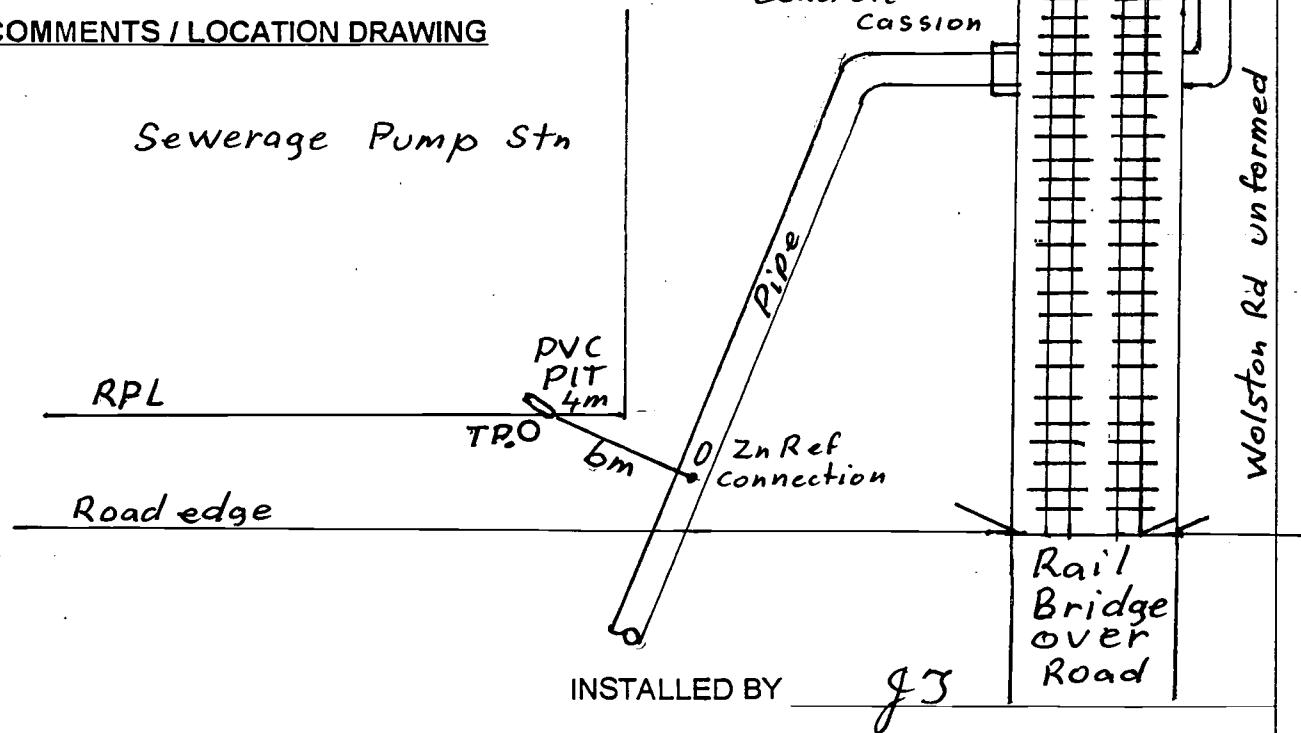
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING*Sewerage Pump Stn*

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering FormProject Wacol to Oxley Sect 1Date 30-7-96TP Location Centenary Hwy 198 Q16TP No. 5Mains Size 1670 m s clTP Type BtSilver chloride
on Steel Cassion**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+33.6CuSo₄ REFERENCE TO PIPE-83.2ZINC TO CuSo₄-116.9**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

9.1 ohm meter

MEGGER READING

.7TEST NO 2

PIN SPACING

RESISTIVITY

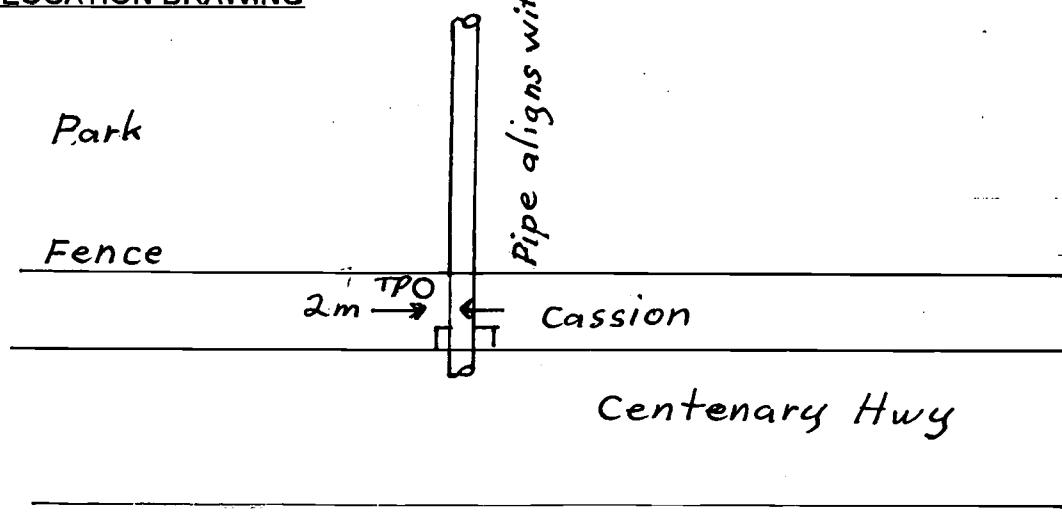
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

INSTALLED BY _____

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering FormProject Wacol to Oxley Sect 1Date 30-7-96TP Location Ducie St 197 R16TP No. 6Mains Size 1670 mscLTP Type Coupon**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

1 - 3

ZINC REFERENCE TO PIPE

-- - 33CuSo₄ REFERENCE TO PIPE-1049ZINC TO CuSo₄-1012**EARTH TESTING**

TEST NO. 1

PIN SPACING

2 m

MEGGER READING

1

RESISTIVITY

13 ohm mtr

TEST NO 2

PIN SPACING

RESISTIVITY

MEGGER READING

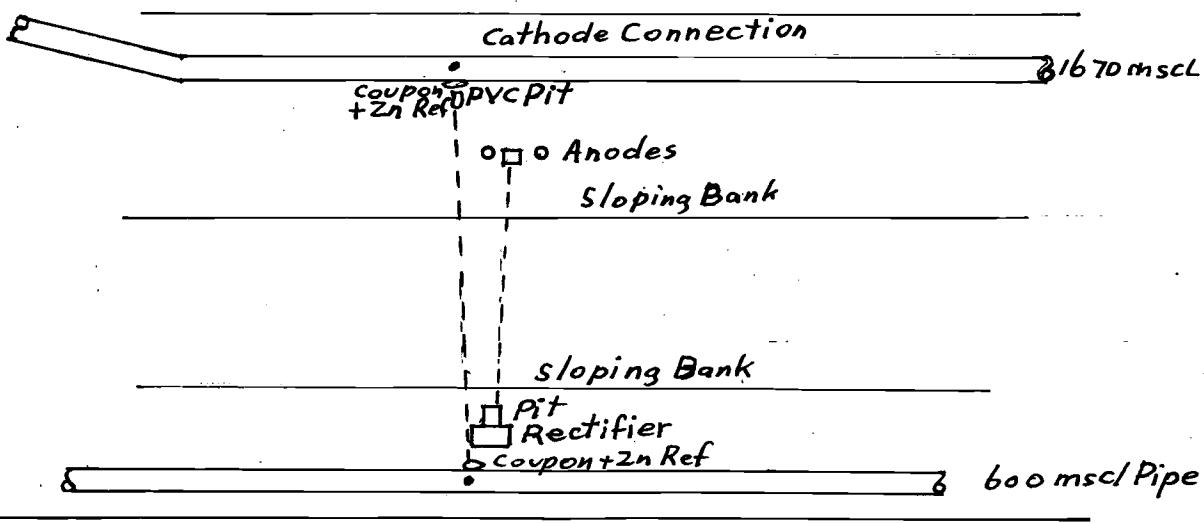
TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

Stratheden St

COMMENTS / LOCATION DRAWINGEbrington St

INSTALLED BY

J.J

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering FormProject Wacol to Oxley Sect 1Date 30-7-96TP Location Archimedes 198 A 18TP No. 7Mains Size 1670 M.S.C.L.TP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+256CuSo₄ REFERENCE TO PIPE-866ZINC TO CuSo₄-1122**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

MEGGER READING

565 ohm mtrTEST NO 2

PIN SPACING

RESISTIVITY

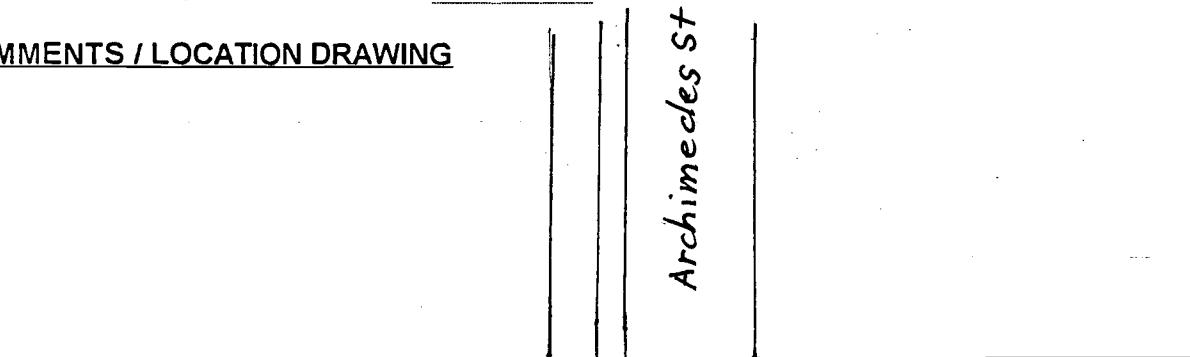
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWINGIpswich Side RdFenceTP O1.5mIpswich divided Rd.Cassion Tunnled under Rd.

INSTALLED BY _____

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering Form

Project Wacol to Oxley Sect 1.....

Date 30-7-96

TP Location Bernoulli St 198 B19

TP No. 8

Mains Size 1670 MSCL.....

TP Type Bx4

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE)	• 05
ZINC REFERENCE TO PIPE	+140
CuSo ₄ REFERENCE TO PIPE	-774
ZINC TO CuSo ₄	-944

EARTH TESTINGTEST NO. 1

PIN SPACING

2

RESISTIVITY 104 ohm mtr

MEGGER READING

8

TEST NO 2

PIN SPACING

RESISTIVITY

MEGGER READING

TEST NO 3

PIN SPACING

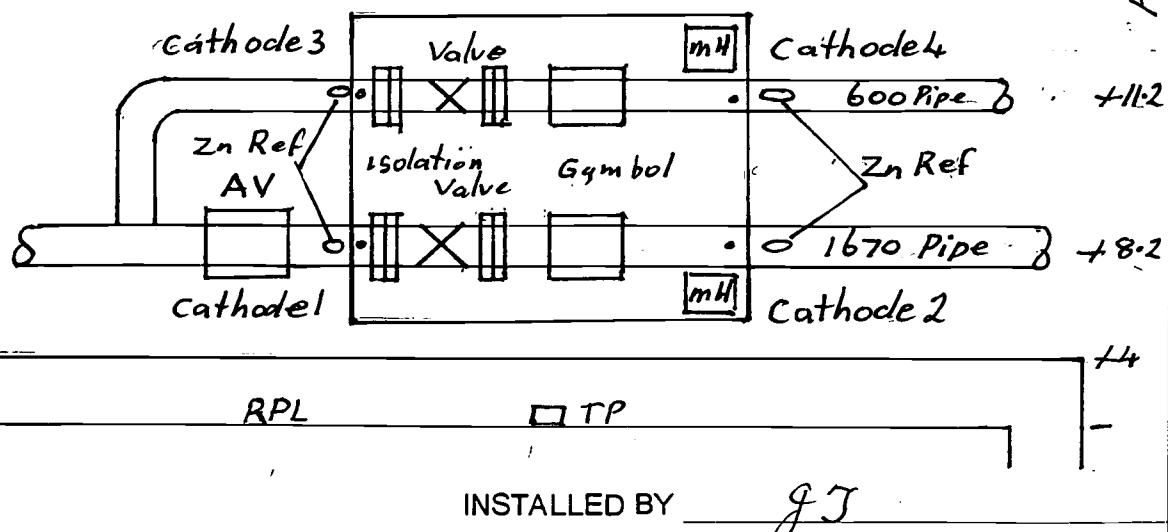
RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

Bernoulli st

Archerfield.



WACOL TO OXLEY SECTION No 1

JOB No:- SFLT9617 / 02 Materials
 /04 Installation
 /06 Commissioning
 /07 Mechanical
 /08 Engraving

CONTACT:- Howard Bennent
Phone No- 018 881 029

NOTE:- Road crossings (Ipswich Motorway and Centenary Highway) require both Ag/AgCL and Metal Oxide refference cells installed in the grout between the pipe and the concrete encasement. Also a Zinc refference cell must be installed external to the road crossings. All refferences are to be brought back to a central test point.

JOHN BRENNEN

Facsimile transmission from

**BRISBANE CITY COUNCIL**

Technology Services Branch

Technical Services Branch
Waterloo Street, Newstead.

Brisbane City Council
69 Ann Street
BRISBANE
QUEENSLAND
GPO Box 1434
BRISBANE
AUSTRALIA 4001

TO : Technical Services Branch Eagle Farm P/Station	ATTENTION : Juliet Anderson 340 31829	FAX NO. 340 31847
DATE : 23/1/95	NO. OF PAGES (including this page) 1	FROM : Jeff Say 340 33689
RE : Request for Charge Number Cathodic Protection		

File : chreq17.fax

Juliet,

Please create the following Technical Services charge numbers and link to the charge provided form the section as defined below.

PROJECT DESCRIPTION : Wacol to Oxley Section 1 T/Main.

Project Scope : Installation of Cathodic Protection on the new Trunk Main.

Technical Services Numbers :

Project	Task	Description	User
SFLT 9617	01	Design	NSD
	02	Materials	E/Farm - NSD
	04	Installation	E/Farm
	05	Internal Services	NSD Water Maint.
	06	Commissioning	E/Farm - NSD
	07	Internal Services	E/Farm W/Shops
	08	Internal Services	E/Farm Engraving

Work Centre : R961

Link to : Capital Project : *Metro Construction*

Project : RTAA 5061

Task : 31702361

Contact : - Anil Karan

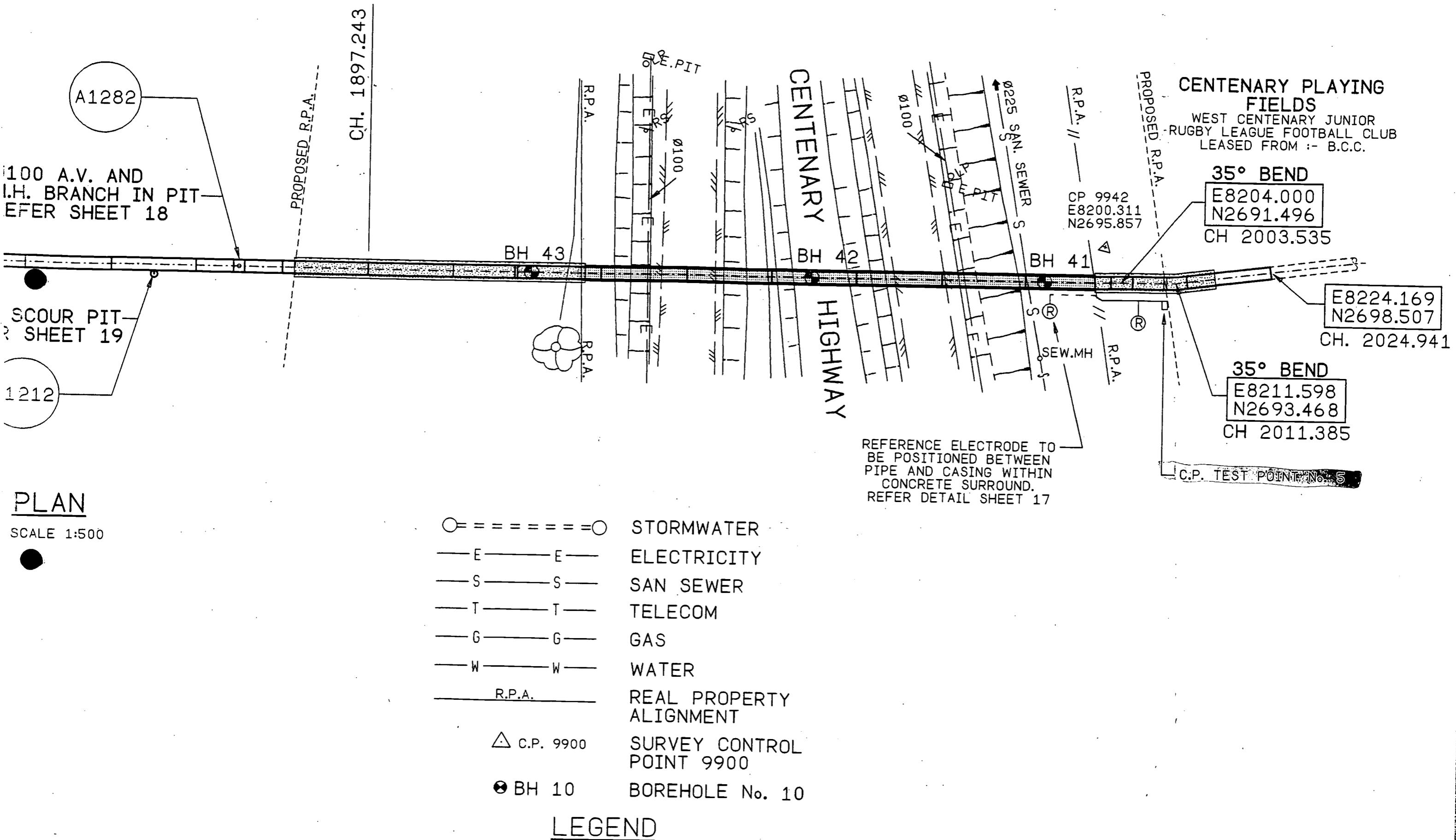
Estimated budget : \$30,000

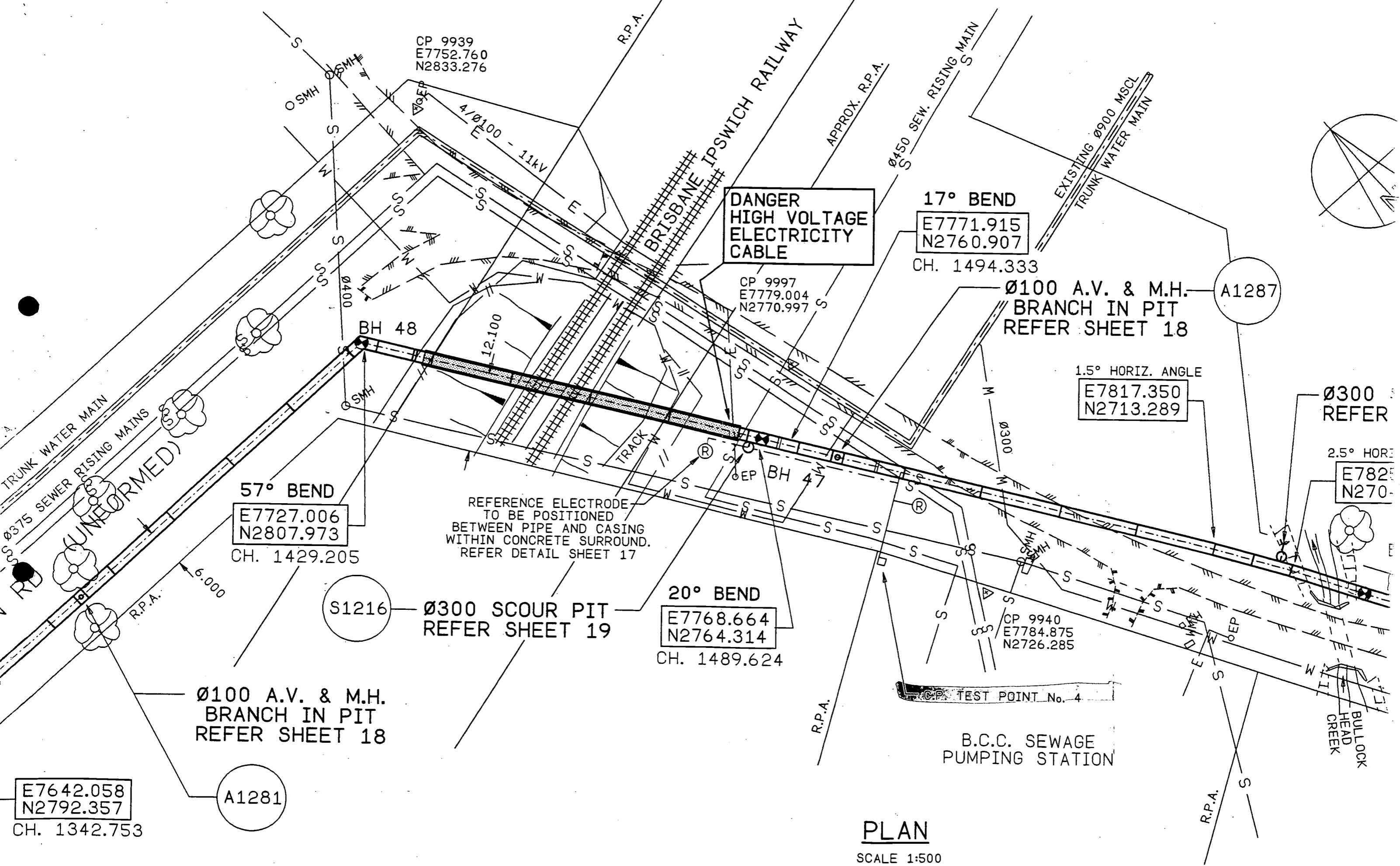
Estimated Project End : Oct 1996

Should you require any additional information please contact myself on 340 33689.

Regards,

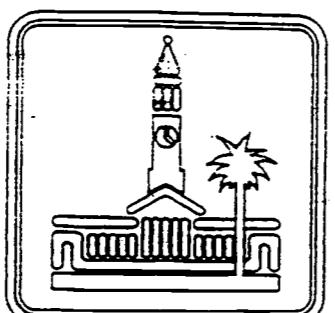
Jeff Say
TO2ME





PLAN

SCALE 1:500



Brisbane City

**BRISBANE CITY COUNCIL
DEPARTMENT OF WATER
SUPPLY AND SEWERAGE
PLANNING AND DESIGN BRANCH**

LOGAN CITY TRUNK MAIN AMPLIFICATION

**DRAWINGS FOR THE CONSTRUCTION OF
WACOL TO OXLEY - SECTION 1
1670 DIAMETER M.S.C.L. WATER MAIN**

**DRAWING NUMBERS
486/4/6-W7080GD TO 486/4/6-W7101RC**

FEBRUARY 1995

*John
AMC
12/1/96*

DRAWING NUMBER
486/4/6-W7080GD
CADD FILE NO. 46W7080

*Norm Lunn
289 1415 2646
Pulseform TMS1312646
3/89*

NOTES

1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTATION AND DRAWINGS.
 2. ALL MATERIALS AND MACHINERY SHALL COMPLY WITH THE CURRENT REQUIREMENTS OF THE CURRENT STANDARDS, AUSTRALIA SPECIFICATIONS AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.
 3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THIS PLAN AND ANY CONSTRUCTION DRAWINGS SHALL NOT BE SCALED.
 4. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
 5. NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
 6. THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND REQUIREMENTS WITH REGARD TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
 7. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.

- 6B FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINMENT OF THE CONTRACT DOCUMENTATION.

ENVIRONMENTAL ISSUES
 FOR DETAILED ENVIRONMENTAL REQUIREMENTS REFER TO CLAUSE A.20 IN THE SPECIFICATION.

THE ALIGNMENT OF THE TRUNK MAIN WILL INVOLVE CONSTRUCTION THROUGH AN ENVIRONMENTALLY SENSITIVE AREA AND AS SUCH WILL REQUIRE SPECIAL CONSIDERATION AND REHABILITATION TECHNIQUES.

ALL ENVIRONMENT PROTECTION MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY CONSTRUCTION WORK, INCLUDING CLEARING, CONCRETE, ETC.

CREEK CROSSINGS
 LOCATION OF SOIL STOCKPILES TO BE NO CLOSER THAN 5 METRES TO THE CREEK.
 SILTATION CONTROL MEASURES DOWNSTREAM OF ANY EXCAVATION WORK.
 NO VEHICLES SHALL ENTER THE CREEK BED.
 REINSTATEMENT AND STABILISATION OF THE CREEK BANKS IN CONJUNCTION WITH AN APPROPRIATE EROSION CONTROL PRODUCT.
 PREVENTION OF SEDIMENTATION WITHIN THE CREEK.

VEGETATION PROTECTION

NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
 ALL DISTURBANCE SHALL BE CONTAINED WITHIN A MAXIMUM 10M WIDE SWATH.
 PLACE TREE GUARDS AROUND ANY TREE WITHIN 4 METRES OF MACHINERY OPERATIONS.
 TRIM SEVERED ROOTS CLEANLY ABOVE THE DAMAGED AREA AND TREAT WITH A SUITABLE HERBICIDE.

DEHABILITATION
 REINSTATEMENT OF PREDISTURBANCE SOIL PROFILES AND COMPACTION LEVELS.
 ALL DISTURBED AREAS SHALL BE LEFT IN A STABLE CONDITION. THIS WILL INVOLVE SEEDING OR TURFING WITH APPROPRIATE GRASS SEED. ON SLOPES, SLOPES SHALL BE COVERED WITH AN EROSION CONTROL PRODUCT OF THE TYPE THAT DOES NOT CONTAIN EXTERNAL WIRE OR NYLON REINFORCEMENT.

ANY TREES REMOVED FROM WITHIN THE PARK AREA SHALL BE REPLACED AS PER THE REQUIREMENTS OF PARKS AND GARDENS BRANCH.

MAIN CONSTRUCTION DETAILS

DATE COMMENCED	DATE COMPLETED
SIGNATURE	DATE

NOTATE AMENDMENT/ISSUE TO ISSUE FOR INITIALS

AMENDMENT & ISSUE REGISTER

MANAGER	DIRECTOR OF PLANNING & DESIGN

DIRECTOR OF CONSTRUCTION	DIRECTOR OF SPW & SERVICES
DATE	DATE

DESIGN	JUN'94	ENGINEER IN CHARGE
DRAWN	JUN'94	SUPERVISING ENGINEER
TRACED	IND	SURVEY 2095
CHKD	NOV'94	FIELD BOOK 7974/6
A.H. DATUM		SURVEYED P BOX ALL

CADD FILE NO.	467081
JOB FILE NO.	(7705/S(288))

BRISBANE CITY COUNCIL
 DEPARTMENT OF WATER SUPPLY & SEWERAGE
 PLANNING & DESIGN BRANCH

PROJECT

MAJOR DISTRIBUTION MAINS

LOGAN CITY TRUNK MAIN

AMPLIFICATION

TITLE

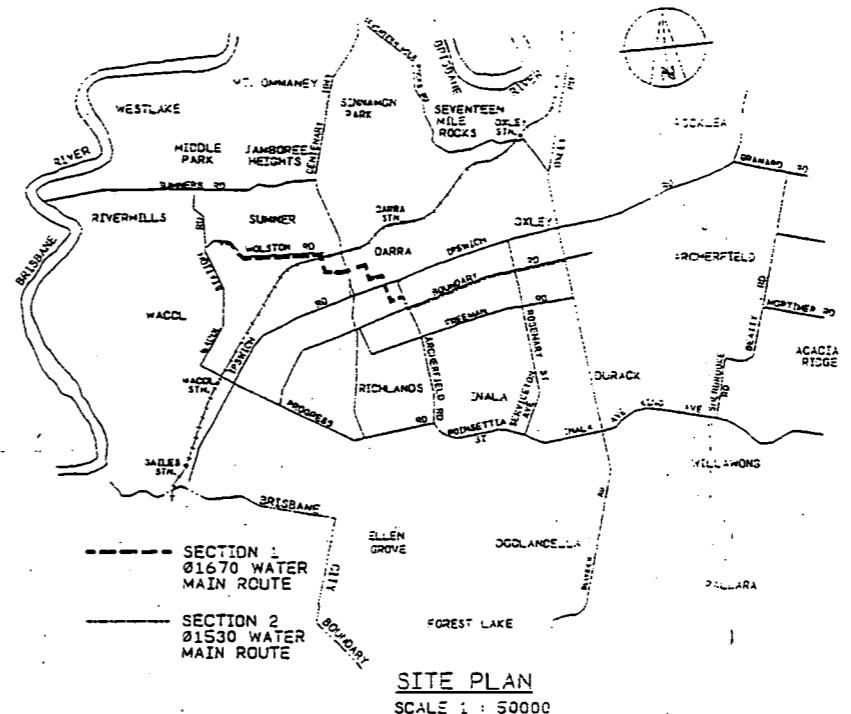
WACOL TO OXLEY SECTION 1

1670 DIA. MSCL WATER MAIN

LOCALITY PLAN

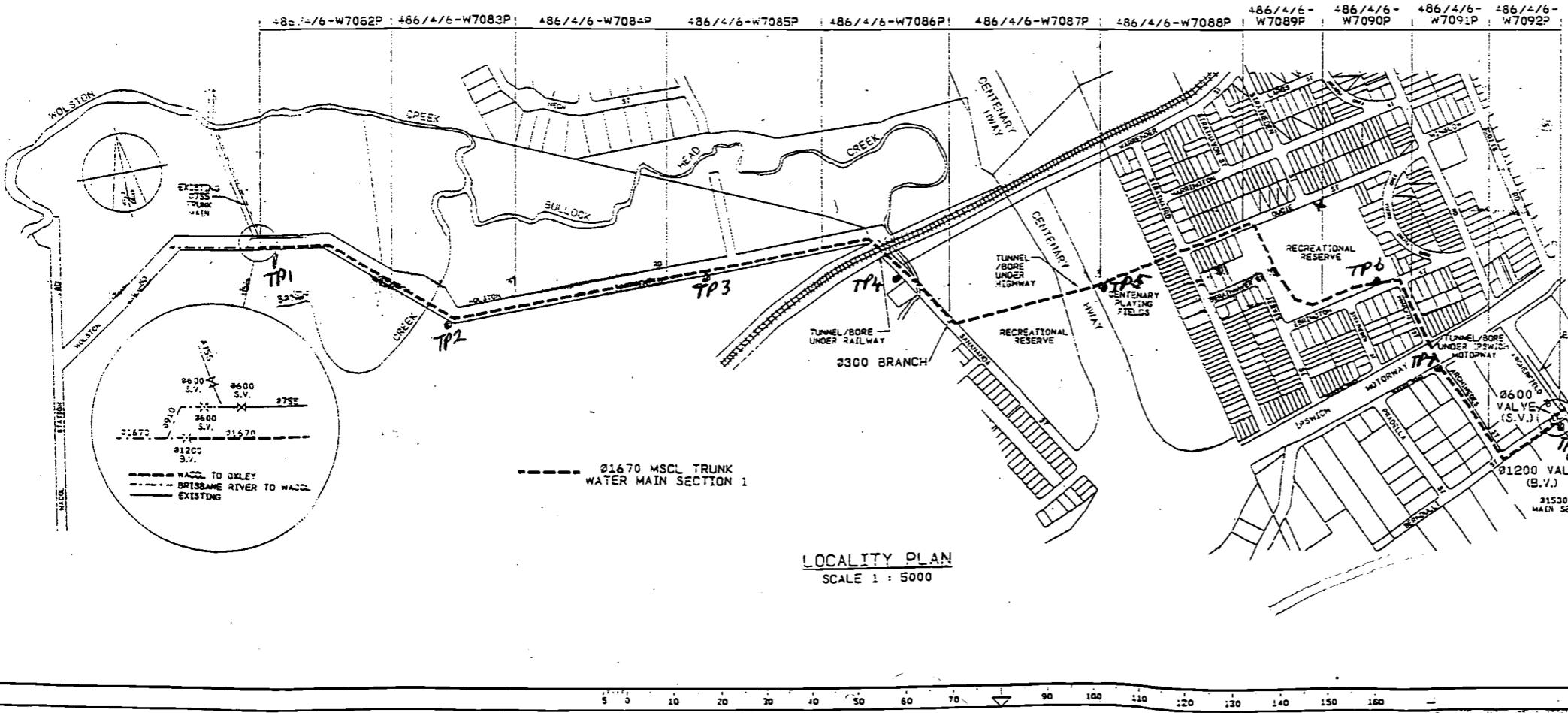
SCALE 1 : 5000 IN 1 OF 20 SHEETS

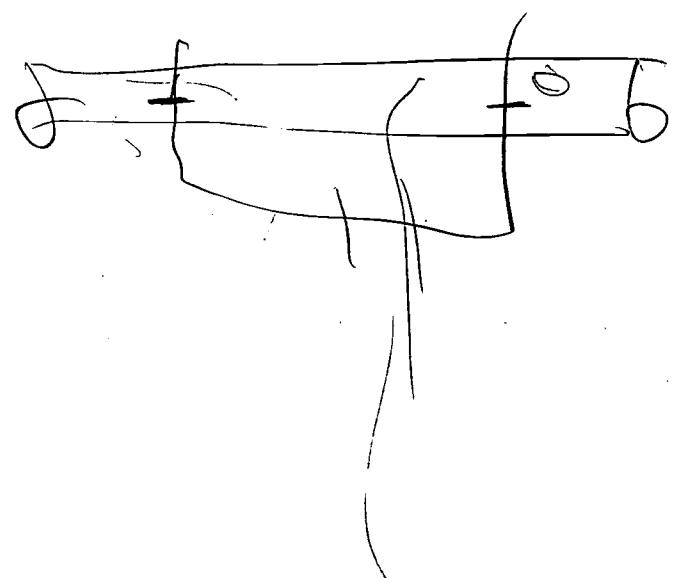
DRAWING NO. 486/4/6-W7081LO AMEND 0



DRAWING LIST			
DRAWING NUMBER	DRAWING TITLE	PIPE CHAINAGE	
486/4/6-W7080GD	COVER SHEET	—	
486/4/6-W7081LO	LOCALITY PLAN	CH. 0.000 - 3391.239	
486/4/6-W7082P	PLAN AND LONGITUDINAL SECTION	CH. 0.300 - 343.574	
486/4/6-W7083P	PLAN AND LONGITUDINAL SECTION	CH. 343.574 - 568.731	
486/4/6-W7084P	PLAN AND LONGITUDINAL SECTION	CH. 568.731 - 998.449	
486/4/6-W7085P	PLAN AND LONGITUDINAL SECTION	CH. 998.449 - 1342.753	
486/4/6-W7086P	PLAN AND LONGITUDINAL SECTION	CH. 1342.753 - 1667.953	
486/4/6-W7087P	PLAN AND LONGITUDINAL SECTION	CH. 1667.953 - 2024.940	
486/4/6-W7088P	PLAN AND LONGITUDINAL SECTION	CH. 2024.940 - 2323.173	
486/4/6-W7089P	PLAN AND LONGITUDINAL SECTION	CH. 2323.173 - 2590.712	
486/4/6-W7090P	PLAN AND LONGITUDINAL SECTION	CH. 2590.712 - 2849.897	
486/4/6-W7091P	PLAN AND LONGITUDINAL SECTION	CH. 2849.897 - 3172.917	
486/4/6-W7092P	PLAN AND LONGITUDINAL SECTION	CH. 3172.917 - 3391.239	
486/4/6-W7093P	IPSWICH RAILWAY CROSSING	CH. 1438.676 - 1474.676	
486/4/6-W7094P	CENTENARY HIGHWAY CROSSING	CH. 1929.035 - 2001.035	
486/4/6-W7095P	IPSWICH ROAD CROSSING	CH. 2934.342 - 2970.342	
486/4/6-W7096P	PIPE LIST	—	
486/4/6-W7097GD	ANCHOR BLOCK AND TRENCH DETAILS	—	
486/4/6-W7098GD	AIR VALVE AND GENERAL DETAILS	—	
486/4/6-W7099GD	SCOUR DETAILS	—	
486/4/6-W7100GD	01200 3600 VALVE PIT GENERAL ARRANGEMENT	—	
486/4/6-W7101RC	01200 3600 VALVE PIT REINFORCEMENT DETAILS	—	

CONTROL POINTS DATA					
FILENAME	POINT NO.	EASTING	NORTHING	SURFACE LEVEL	DESCRIPTION
R095	9933	6552.118	2856.083	12.792	STD BCC CONC MARK
R095	9999	6649.384	2786.675	10.780	PEG
R095	9998	6739.151	2722.676	4.605	PEG
R095	9934	6845.295	2646.879	7.972	STD BCC CONC MARK
R095	9935	6960.917	2688.151	13.107	STD BCC CONC MARK
R095	9936	7272.545	2748.249	13.182	STD BCC CONC MARK
R095	9937	7377.215	2760.736	13.870	NAIL/CONC
R095	9938	7629.496	2809.444	12.142	STD BCC CONC MARK
R095	9939	7763.007	2815.251	9.291	STAR PICKET
R095	9997	7779.004	2770.997	9.612	SPIKE
R095	9940	7784.875	2726.285	9.339	STD BCC CONC MARK
R095	9941	7904.380	2617.167	11.340	STD BCC CONC MARK
R095	9942	8200.311	2695.857	23.594	STD BCC CONC MARK
R095	9943	8353.582	2751.198	27.392	PEG
R095	9944	8403.016	2771.465	29.096	SCREW/KERB
R095	9945	8524.316	2810.091	34.114	SCREW/KERB
R095	9946	8579.271	2643.648	24.852	SCREW/KERB
R095	9947	8743.301	2646.550	30.604	SCREW/KERB
R095	9948	8848.870	2688.980	35.120	SCREW/KERB
R095	9949	8908.867	2553.938	41.586	SCREW/KERB
R095	9950	8918.740	2506.870	42.839	SCREW/TRAFFIC IS.
R095	9951	8974.297	2393.520	43.164	SCREW/CON.
R095	9952	9043.358	2288.305	38.195	SCREW/CON.
R095	9953	9214.116	2389.525	47.220	SCREW/CON.





NOTES

THIS DRAWING SHALL BE READ IN CONJUNCTION WITH OTHER CONTRACT DOCUMENTATION AND DRAWINGS.

ALL MATERIALS AND WORKSHIPS SHALL BE APPROVED AND MEET THE REQUIREMENTS OF THE CURRENT STANDARDS AUSTRALIA SPECIFICATIONS AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION. DRAWINGS SHALL NOT BE SCALED.

ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.

NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THIS WORK. HE SHALL IMMEDIATELY REPORT FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.

ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.

FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.

MAMMOLE COVERS AND SPINDLE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MAMMOLE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL WORKER.

INSULATED GUIT SETS AND GASKETS SHALL BE INSTALLED AND MAINTAINED AS ELECTRICAL INSULATION ON ALL FLANGED BRANCHES INCLUDING RETROFITTING CONNECTIONS, SCOURS AND AIR VALVES.

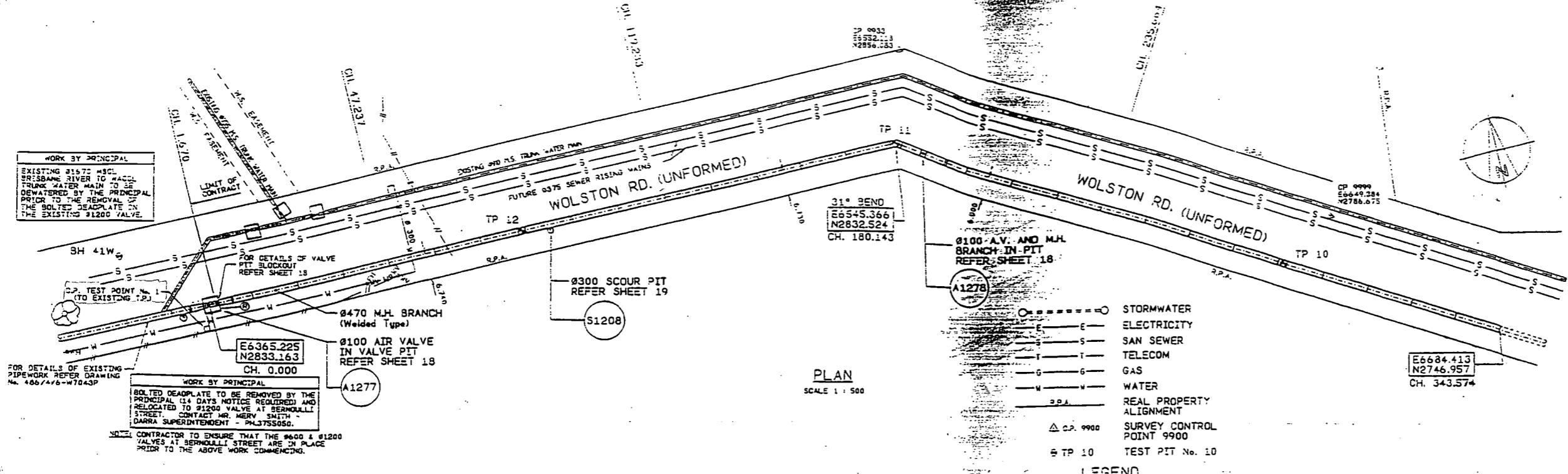
UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.

EXTERNAL COATINGS ARE NOT TO BE APPLIED TO PIPEWORK IF FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.

NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.

THE BOC'S MECH. AND ELEC. SERVICES BRANCH IS TO CONTACT PERIODICALLY THE LOCAL POWER SUPPLY COMPANY FOR CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.

NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.



01670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

IMRESSED CURRENT CATHODIC PROTECTION

WOLSTON ROAD (UNFORMED) |

LEGEND

LONGITUDINAL SECTION

CH. 0.000 - 343.574

SCALE OF METRES

**AMENDMENT/ISSUE TO ISSUE FOR INTALS
AMENDMENT & ISSUE REGISTER**

MANAGER DIRECTOR OF PLANNING
P. DESIGN

RE	DATE	
DIRECTOR OF INSTRUCTION	DIRECTOR OF M.S. E. SERVICES	DIRECTOR OF SEW. OPERATIONS/SAWS DISPERSION

DATE DATE

MM	S.S.G.	OCT '94	SUPERVISING ENGINEER	/2 '3/95
			SURVEY NO.	0095A

C	M.G.L.	NOV '94	FIELD BOOK	7974/6
H. DATUM			SURVEYED	R. BOXALL

FILE NO.	46W7082
FILE NO.	(7)705/S(288)

BRISBANE CITY COUNCIL

**DEPARTMENT OF WATER
SUPPLY & SEWERAGE
PLANNING & DESIGN BRANCH**

JECT
JOR DISTRIBUTION MAINS
GAN CITY TRUNK MAIN
PLIFICATION

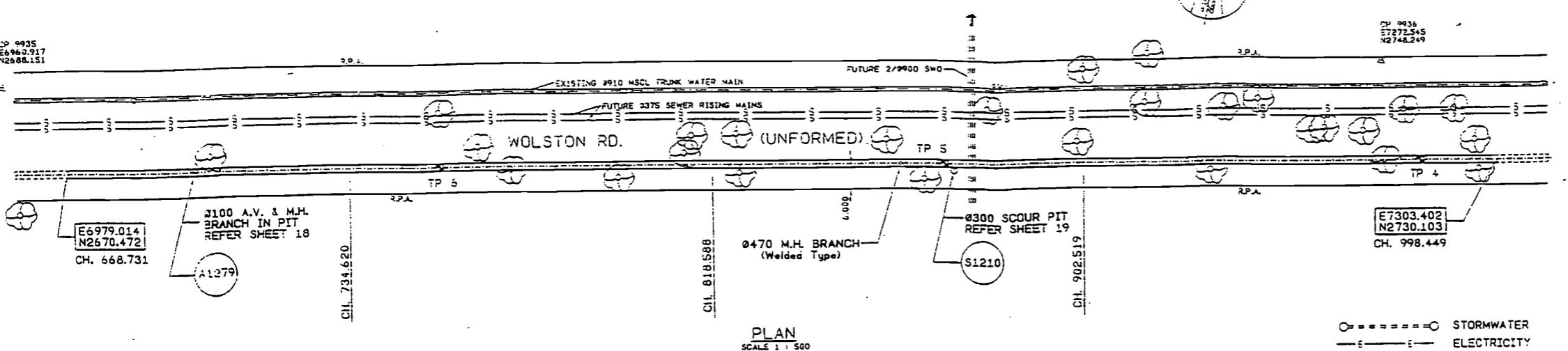
E
COL TO OXLEY SECTION 1
70 DIA MSCI WATER MAIN

AN AND LONGITUDINAL SECTION

DRAWING NO. AMEND.
86/4/6 - W7082P 0

NOTES

29 9935
26963.9
4268A-1



PLAN

E - E
 S - S
 T - T
 G - G
 W - V
3 P.A.
 △ C.P. 9900
 ↗ TP 10

STORMWATER
 ELECTRICITY
 SAN SEWER
 TELECOMM
 GAS
 WATER
 REAL PROPERTY
 ALIGNMENT
 SURVEY CONTROL
 POINT 9900
 TEST PIT No. 10

GENERAL

G1 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH OTHER DRAWINGS, DOCUMENTATION AND DRAWINGS.

G2 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT STANDARDS, CODES OF PRACTICE, BCA AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.

G3 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION. DRAWINGS SHALL NOT BE SCALED.

G4 MY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.

G5 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

G6 THE CONTRACTOR SHALL MAKE ENSURE PLACEMENT WITHIN AND EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.

G7 WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.

G8 FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.

G9 MAMMOLITE COVERS AND SPINDLE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MAMMOLITE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL.

PIPework

P1 INSULATED BOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLANGED BRANCHES AND RECYCLIC CONNECTIONS, SCOURS AND AIR VALVES.

P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.

P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED WHEN PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.

P4 NO REINFORCEMENT IS TO BE REQUIRED TO OR MAKE CONTACT WITH THE PIPEWORK.

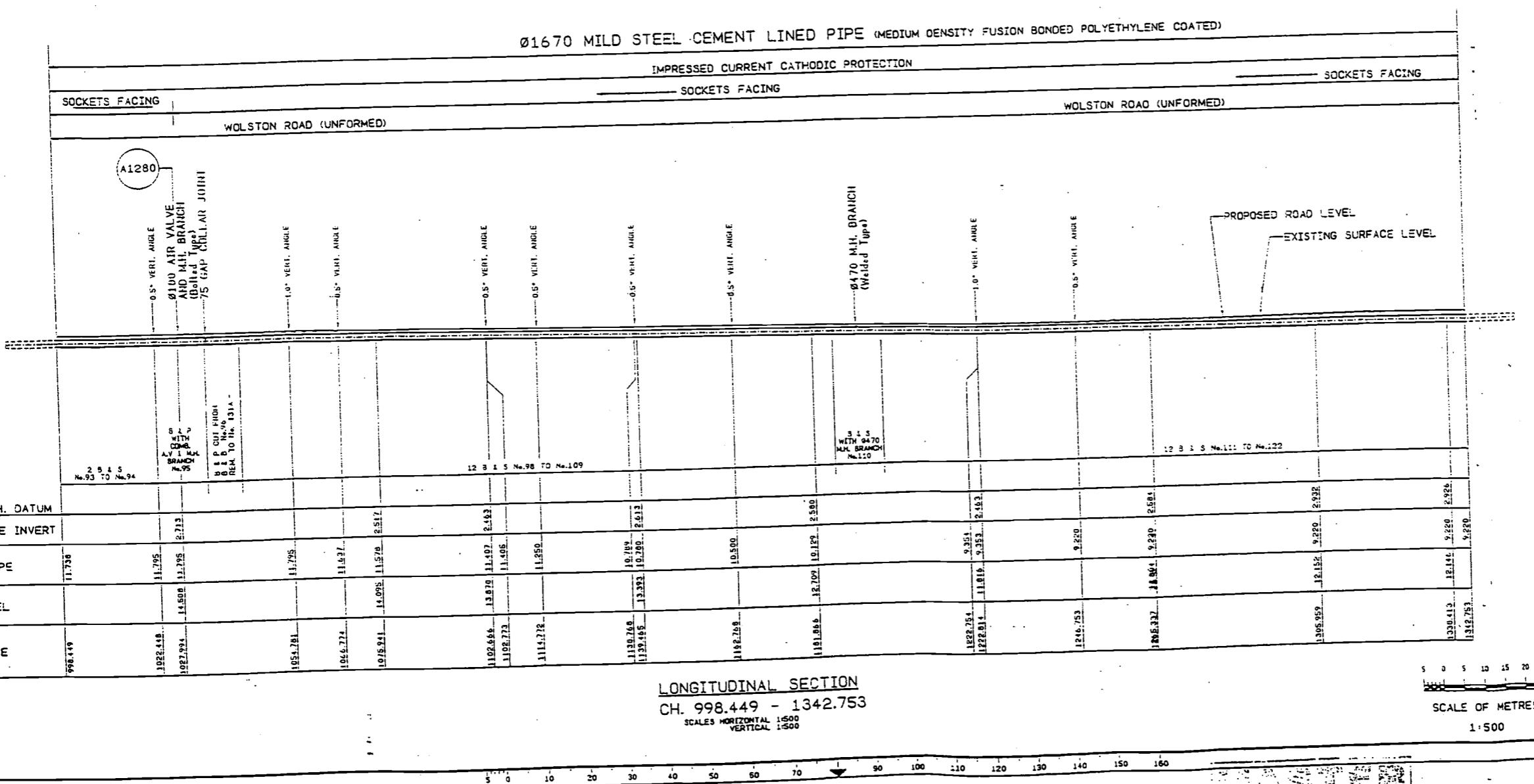
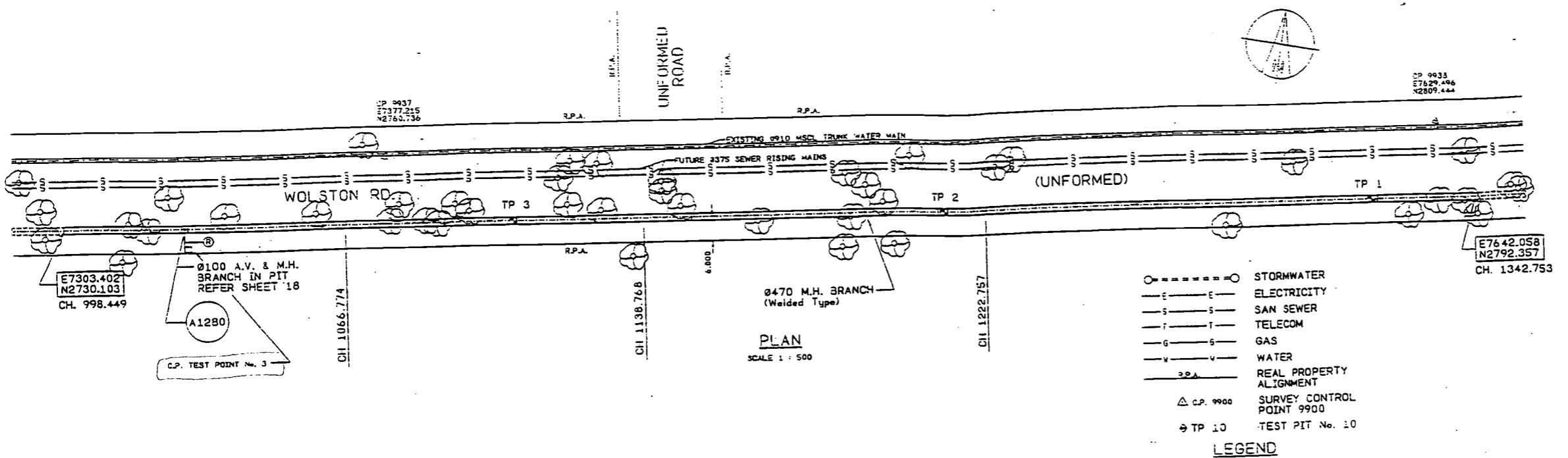
P5 THE BCC'S MECH. AND ELEC. SERVICES BRANCH TO BE CONTACTED PRIOR TO BACKFILLING FOR HYDRAULIC PROTECTION TEST POINTS OR OTHER FACILITIES TO BE INSTALLED.

Trees

T1 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

MAIN CONSTRUCTION DETAIL			
BUREAU COMMENCED	DATE COMPLETED		
SIGNATURE	DATE		
-	-		
-	-		
-	-		
-	-		
NOTICE AMENDMENT/ISSUE TO ISSUE FROM MINOR AMENDMENT & ISSUE REGISTER			
MANAGER	DIRECTOR OF PLANNING & DESIGN		
DATE	DATE		
DIRECTOR OF CONSTRUCTION	DIRECTOR OF MATERIALS & SERVICES	DIRECTOR OF DESIGN & DRAFTING DISTRIBUTION	
DATE	DATE	DATE	
DESIGN	S.S.C.	OCT 94 IN CHARGE	ENGINEER IN CHARGE
DRAWN	S.S.C.	OCT 94	SUPERVISOR
TRACED			REVIEWED
OK'D	M.G.L.	NOV 94 FILE BOOK	2005
A.H. DATUM		SURVEYED	R. BOXALL
CADD FILE NO.	46-W7084		
JCS FILE NO.	(7705/5/258)		
 BRISBANE CITY COUNCIL DEPARTMENT OF WATER SUPPLY & SEWERAGE PLANNING & DESIGN BRANCH			
PROJECT			
MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION			
TITLE			
WACOL TO OXELEY SECTION 1 1670 DIA. MSCL WATER MAIN PLAN AND LONGITUDINAL SECTION			
SCALE AS SHOWN IN 4 OF 20 SHEETS			
DRAWING NO.			AM
486/4/6-W7084P			O

- GENERAL**
1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTATION AND DRAWINGS.
 2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT STANDARDS, AUSTRALIA SPECIFICATIONS AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.
 3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY WORK. ACTUAL DRAWINGS SHALL NOT BE SCALED.
 4. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
 5. NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
 6. THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES IN THE AREA AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
 7. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.
 8. FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.
 9. MANHOLE COVERS AND SPINDEL BOXES, AIR VALVE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MANHOLE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL.
- PIPework**
- P1 INSULATED BOLT SETS AND GASKETS SHALL BE INSTALLED AND TIGHTENED FOR ELECTRICAL ISOLATION OF ALL RETICULATED BRANCHES (INCLUDING RETICULATION CONNECTIONS, SCOURS AND AIR VALVES).
 - P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.
 - P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED WHEN PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.
 - P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.
 - P5 THE BCPS MECH. AND ELEC. SERVICES BRANCH IS TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.
- Trees**
- NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.



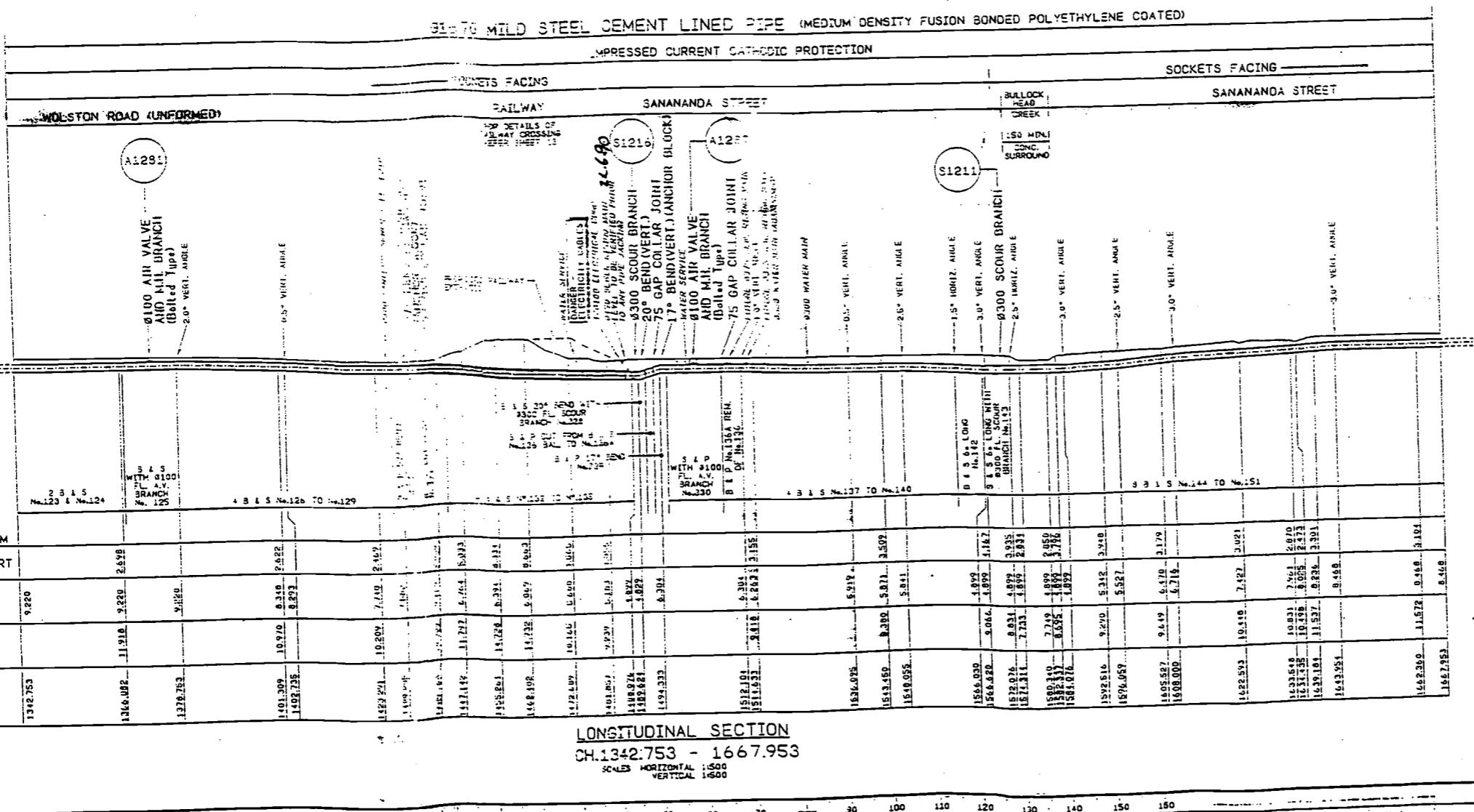
NOTES

<u>D</u>	<u>E</u>	<u>S</u>	<u>T</u>	<u>G</u>	<u>W</u>	<u>R</u>
- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
<u>8</u>	<u>8</u>	<u>8</u>	<u>7</u>	<u>6</u>	<u>6</u>	<u>5</u>
- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
<u>3</u>	<u>3</u>	<u>3</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>
- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
<u>1</u>	<u>1</u>	<u>1</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>
- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
<u>9</u>	<u>9</u>	<u>9</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>
- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
<u>P.P.A.</u>						
<u>REAL PROPERTY ALIGNMENT</u>						
<u>△ C.P. 9900</u>						
<u>SURVEY CONTROL POINT 9900</u>						
<u>8 BH 10</u>						
<u>BOREHOLE No. 10</u>						

LEGEND

31-74 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

UPRESSED CURRENT CATHODIC PROTECTION



THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTATION AND DRAWINGS.

1 MATERIALS AND WORKMANSHIP SHALL MEET THE REQUIREMENTS OF THE CURRENT STANDARDS AUSTRALIA SPECIFICATIONS AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION. DRAWINGS SHALL NOT BE SCALED.

ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.

NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.

ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.

FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.

1 BOREHOLE OPENERS AND SPINOLE BOXES
2 SCOUR PITS, SCOUR PITS, AIR
3 VIBRATING DRILLED BOREHOLE PITS.
4 SHALL BE SUPPLIED BY THE PRINCIPAL
5 TOWER.

1 INSULATED BOLT SETS AND GASKETS
2 SHALL BE INSTALLED AND TESTED
3 FOR ELECTRICAL INSULATION. ALL
4 FLANGED BOREHOLE RETICULATION
5 CONNECTIONS, SCOUR AND AIR VALVES.

2 UNLESS OTHERWISE INDICATED ANCHOR
3 BLOCKS SHALL BE UNREINFORCED.

3 EXTERNAL COATINGS ARE NOT TO BE
4 REMOVED WITHOUT PIPework FITTINGS ARE
5 SURROUNDED OR COVERED IN CONCRETE.

4 NO REINFORCEMENT IS TO BE WELDED TO
5 OR MAKE CONTACT WITH THE PIPework.

5 THE BDC'S MECH. AND ELEC. SERVICES
6 BRANCHES ARE TO BE LOCATED PRIOR TO
7 BACKFILLING AREAS WHERE CADMOC
8 PROTECTION TEST POINTS OR OTHER
9 FACILITIES ARE TO BE INSTALLED.

10 TREES SHALL NOT BE REMOVED WITHOUT
11 THE APPROVAL OF THE SUPERINTENDENT.

MAIN CONSTRUCTION DETAILS			
DATE COMMENCED	DATE	COMPLETED	
SIGNATURE	DATE		
INDICATE AMENDMENT/ASSE TO ASSUME FOR INITIALS			
AMENDMENT & ISSUE REGISTER			
MANAGER	DIRECTOR OF PLANNING & DESIGN		
DATE	DATE		
DIRECTOR OF CONSTRUCTION	DIRECTOR OF M&E SERVICES	DIRECTOR OF SERV. DISTRIBUTION	
DATE	DATE	DATE	
DESIGN S.S.G.	OCT '94	ENGINEER IN CHARGE	<i>John Paul Papageorgiou</i>
DRAWN S.S.G.	OCT '94	SUPERVISING ENGINEER	<i>John Paul Papageorgiou</i>
TRACED	NO	SURVEY	8005
OK'D M.G.L.	NOV '94	FELD BOOK	7974/6
A.H. DATUM	SURVEYED R.BOXALL		
CADD FILE NO.	46W7086		

BRISBANE CITY COUNCIL
DEPARTMENT OF WATER
SUPPLY & SEWERAGE
GENERAL BRANCH

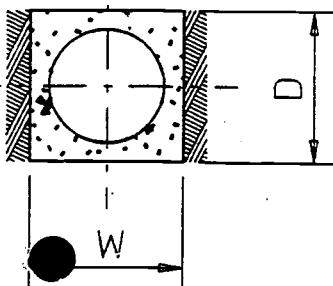
PROJECT
MAJOR DISTRIBUTION MAINS
LOGAN CITY TRUNK MAIN

WACOL TO OXLEY SECTION 1
16 70 DIA. MSCL WATER MAIN
PLAN AND LONGITUDINAL SECTION

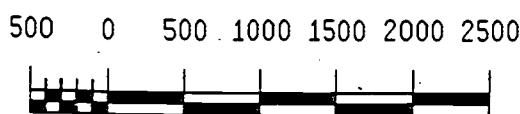
SCALE AS SHOWN	N ^o 6 OF 20	HEET
DRAWING N ^o	AMEN	
486/4/6-W7086P	0	

—

2.750	23.5	Cathodic Protection System - Wacol to Oxley - Trunk Water Main - Section 1 - OM Manual		
2.750	39.0			
2.750	23.5			
2.750	35.0			
2.750	41.5			
D CONCRETE R BLOCK DETAIL	98			
2.750	26.5			
2.750	26.5			
2.750	17.0			
2.750	26.5			
2.750	45.0			
2.750	61.0			
2.750	30.0			
2.750	8.0			
1.400	7.5			
1.400	5.5			



PICAL SECTION

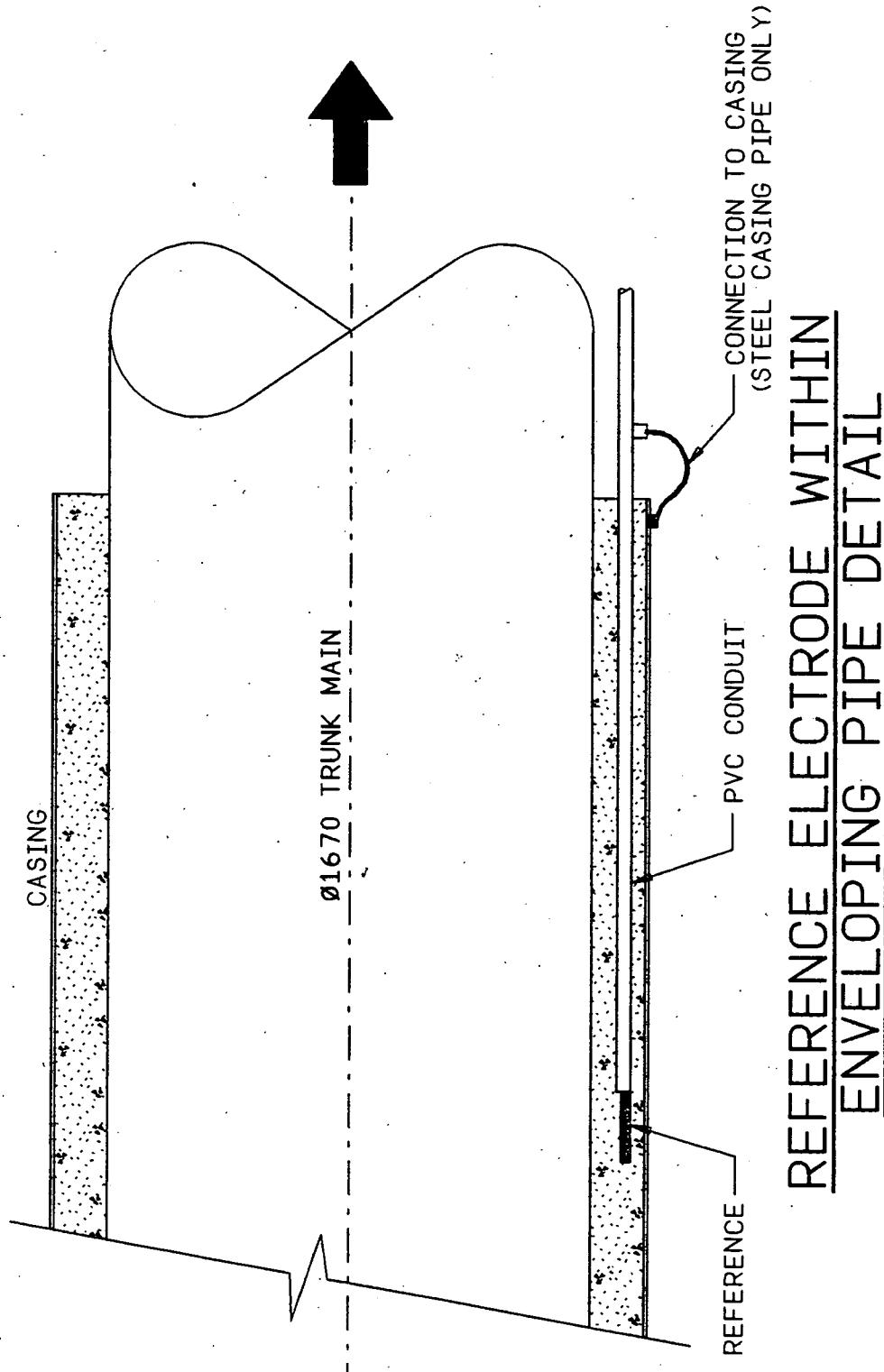


SCALE OF MILLIMETRES

1:50

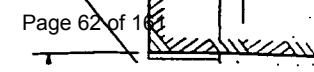
NO	DATE	AMENDMENT/ISSUE TO/ISSUE FOR	INITIALS
AMENDMENT & ISSUE REGISTER			
MANAGER		DIRECTOR OF PLANNING & DESIGN	
DATE		DATE	
DIRECTOR OF CONSTRUCTION		DIRECTOR OF M. & E. SERVICES	
DATE		DATE	
DESIGN	M.G.L. P.GAW	DEC'94 DEC'94	ENGINEER IN CHARGE <i>R. Haworth</i> <i>15/3/95</i>
DRAWN	G.S. B.O.B.	OCT'94 DEC'94	SUPERVISING ENGINEER <i>Jas 15/3/95</i>
TRACED			SURVEY NO.
CHK'D.	M.G.L.	DEC'94	FIELD BOOK
A.H. DATUM		SURVEYED	
CADD FILE NO.		46W7097	
JOB FILE NO.		(7)705/5(288)	
 Brisbane City		BRISBANE CITY COUNCIL DEPARTMENT OF WATER SUPPLY & SEWERAGE PLANNING & DESIGN BRANCH	
PROJECT MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION			
TITLE WACOL TO OXLEY SECTION 1 1670 DIA. MSCL WATER MAIN ANCHOR BLOCK AND TRENCH DETAILS			
SCALE AS SHOWN		Nº 17	OF 20 SHEETS
DRAWING N°			AMEND.
486/4/6-W7097P			0

NOTE: LINE LAGA



SCALE 1:25

GRAVEL, LOAM OR SAND BACKFILL
MATERIAL COMPACTED TO NOT
LESS THAN 97% RRD
REFER SPECIFICATION



NOTES

GENERAL

G1 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH OTHER CONTRACT DOCUMENTATION AND DRAWINGS.

G2 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT STANDARDS AUSTRALIA SPECIFICATIONS AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.

G3 THE CONTRACTOR SHALL VERIFY DIMENSIONS ON SITE PRIOR TO CONSTRUCTION. DRAWINGS SHALL NOT BE SCALED.

G4 ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.

G5 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

G6 THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.

G7 ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT REGULATIONS AND GUIDELINES.

G8 FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.

G9 MANHOLE COVERS AND SPINOLE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MANHOLE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL PIPEWORK.

P1 INSULATED BOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLANGED BONDED FITTINGS INCLUDING RETICULATION CONNECTIONS, SCOURS AND TURF VALVES.

P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.

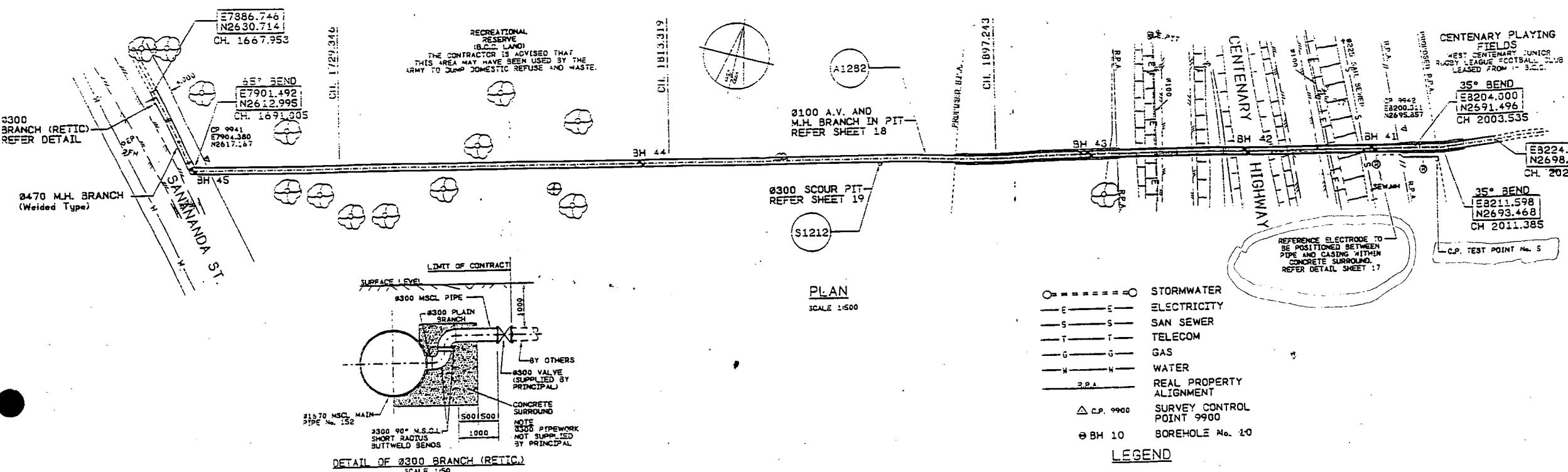
P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED WHERE PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.

P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.

P5 THE BOCS MECH AND ELEC SERVICES BRANCH TO CHARACTER PRIOR TO BORING/DRILLING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.

Trees

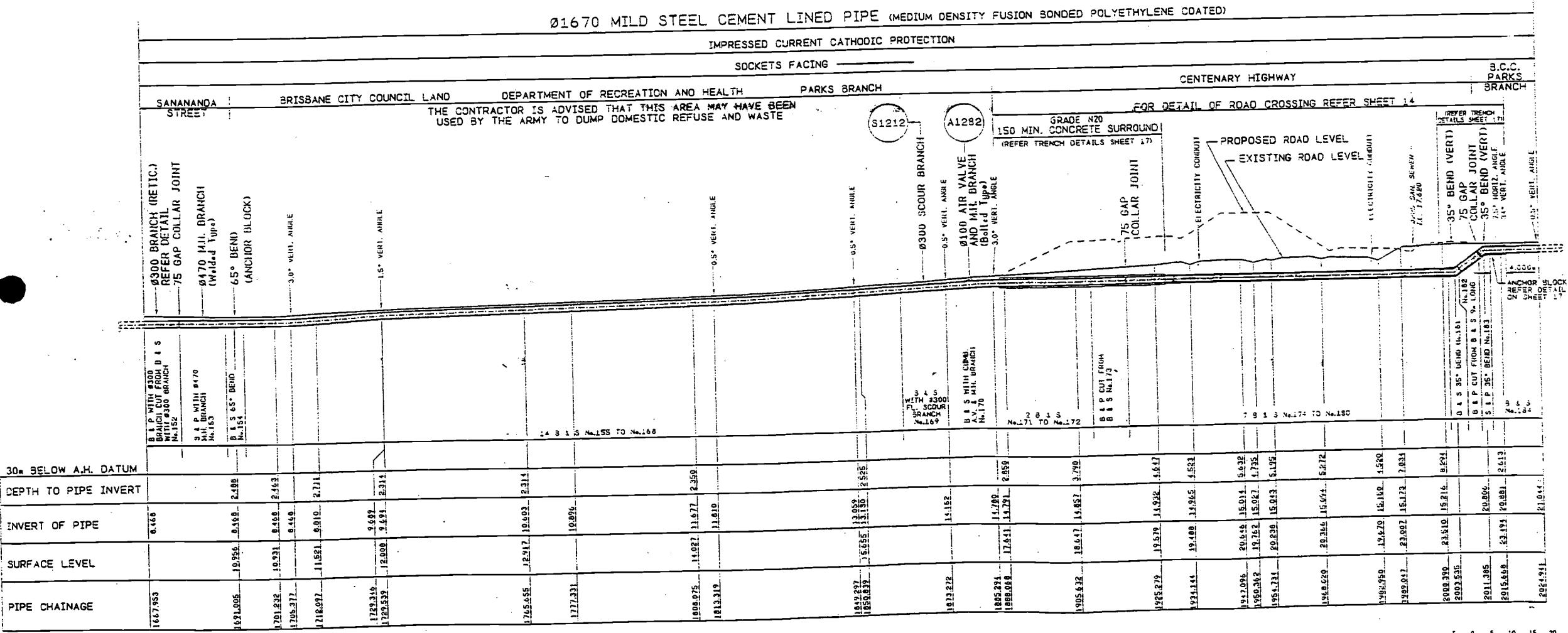
T1 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.



61670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

COMPRESSED CURRENT CATHODIC PROTECTION

LEGEND



LONGITUDINAL SECTION
CH. 1667.953 - 2024.941
SCALE HORIZONTAL 1:500
VERTICAL 1:500

5 0 5 10 15 20 25

SCALE OF METRES

1 : 500

MAIN CONSTRUCTION DETAILS				
DATE COMMENCED	DATE COMPLETED			
SIGNATURE	DATE			
DATE AMENDMENT/ASSESSABLE TO ISSUE FOR INITIAL AMENDMENT & ISSUE REGISTER				
MANAGER	DIRECTOR OF PLANNING & DESIGN			
DATE	DATE			
DIRECTOR OF INSTRUCTION	DIRECTOR OF M&E SERVICES/OPERATIONS/W/S & DISTRIBUTION	DIRECTOR OF SEV S/CS/		
DATE	DATE	DATE		
SIGN.	S.S.G.	OCT '74	ENGINEER IN CHARGE WATER	
DAWN	S.S.G.	OCT '74	SUPERVISING ENGINEER	
ACED			SURVEY NO. R095	
KD	M.G.L.	OEC '74	FIELD BOOK	7974/6
A.H. DATUM		SURVEYED R.BOXALL		
ADD FILE NO		46W/0887		
CB FILE NO		171705/542889		

BRISBANE CITY COUNCIL
**DEPARTMENT OF WATER
SUPPLY & SEWERAGE**
PLANNING & DESIGN BRANCH

PROJECT
MAJOR DISTRIBUTION MAINS
LOGAN CITY TRUNK MAIN
AMPLIFICATION

WACOL TO OXLEY SECTION 1
700 DIA. MSCL WATER MAIN
PLAN AND LONGITUDINAL SECTION

SCALE AS SHOWN IN 7 OF 20 SHEET
DRAWING NO. 186-116-W7087P AM 0

Interference Testing Pole No
of Supply

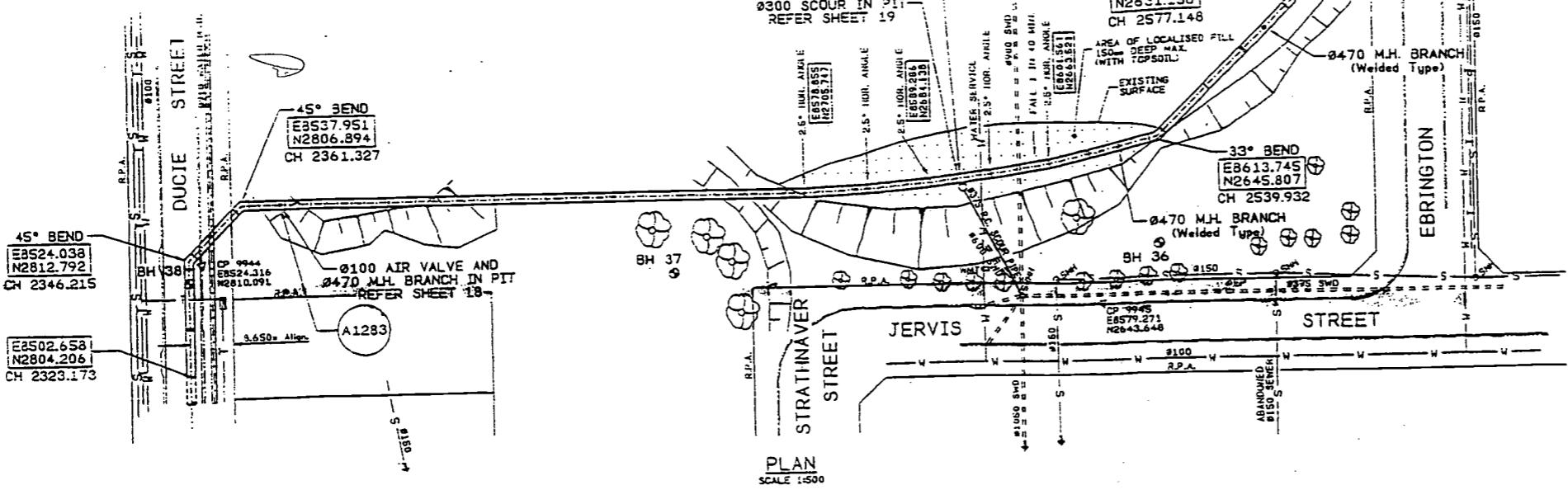
C.P. overall view drawing
check for variations so I can get proper drawings
TP + Anode Plan Yet to come

NOTES

- G1 THIS DRAWING SHALL BE USED IN CONJUNCTION WITH OTHER WORKERS DOCUMENTATION AND DRAWINGS.
- G2 MATERIALS AND DIMENSIONS SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS OF THE CURRENT EDITION OF THE AUSTRALIA SPECIFICATIONS AND CODES AND THE BY-LAWS OF RELEVANT BUILDING AUTHORITIES.
- G3 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION DRAWINGS SCALE 1:500.
- G4 ANY DISCREPANCY SHALL BE SETTLED BY THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
- G5 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
- G6 THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES NEARBY ADJACENT TO THE SITE. WORK SHALL NOT BE PERFORMED FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
- G7 ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND INDUSTRY HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.
- G8 FOR DETAILS OF BOREHOLE LOSS REFER TO THE GEOTECHNICAL REPORT DOCUMENTATION.
- G9 MANHOLE COVERS AND SPINDEL BOXES FOR ALL VALVE PITS, SIGHT PITS, AIR VALVE PITS, REINFORCED MANHOLE CONNECTIONS, SCOURS AND AIR VALVES, SHALL BE SUPPLIED BY THE PRINCIPAL.
- P1 PRE-ASSEMBLED BOLT SETS AND GASKETS SHALL BE INSTALLED AND SEALED FOR ELECTRICAL INSULATION.
- P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.
- P3 EXTERIOR COATINGS ARE NOT TO BE APPLIED TO PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.
- P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE SPREWWORK.
- P5 THE SOCI'S MECH. AND ELEC. SERVICES BRANCH TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.
- Trees
T1 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

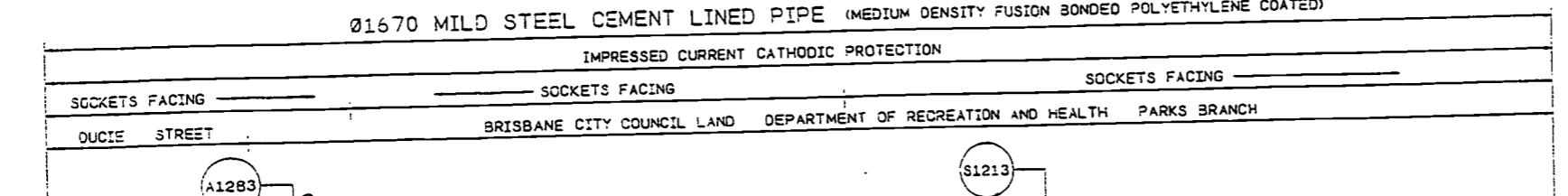
Legend

-  STORMWATER
-  ELECTRICITY
-  SAN SEWER
-  TELECOM
-  GAS
-  WATER
-  R.P.A.
-  CP. 9900
-  SURVEY CONTROL POINT 9900
-  BH 10
-  BOREHOLE No. 10



01670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

IMPRINTED CURRENT CATHODIC PROTECTION



MAIN CONSTRUCTION DETAILS	
DATE COMMENCED	DATE COMPLETED
SIGNATURE	DATE

NOTABLE AMENDMENTS/ISSUE TO SITE FOR TENTHIALS

AMENDMENT & ISSUE REGISTER

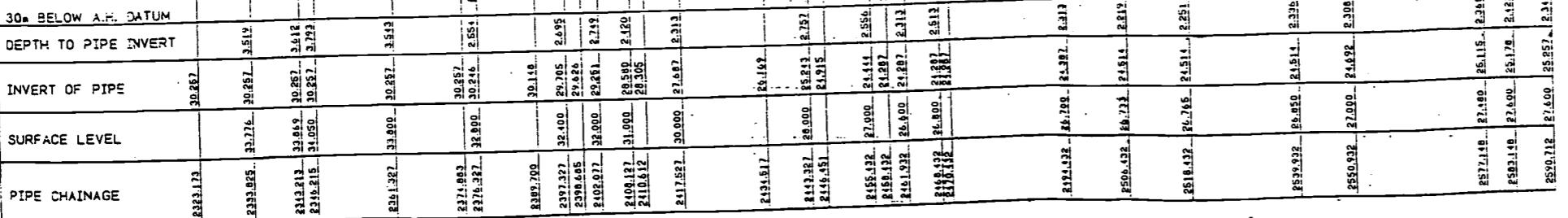
MANAGER	DIRECTOR OF PLANNING & DESIGN
DATE	DATE
DIRECTOR OF CONSTRUCTION	DIRECTOR OF SEWAGE SERVICES/OPERATIONS/ESTABLISHMENT
DESIGN	ENGINEER IN CHARGE
TRACED	SUPERVISING ENGINEER
OK'D	SURVEY
A.H. DATUM	FIELD BOOK
CADD FILE NO.	1974/6
JOB FILE NO.	46W7089

BRISBANE CITY COUNCIL
DEPARTMENT OF WATER
SUPPLY & SEWERAGE
PLANNING & DESIGN BRANCH

PROJECT
MAJOR DISTRIBUTION MAINS
LOGAN CITY TRUNK MAIN
AMPLIFICATION

TITLE
WACOL TO OXLEY SECTION 1
1670 DIA MSCL WATER MAIN
PLAN AND LONGITUDINAL SECTION

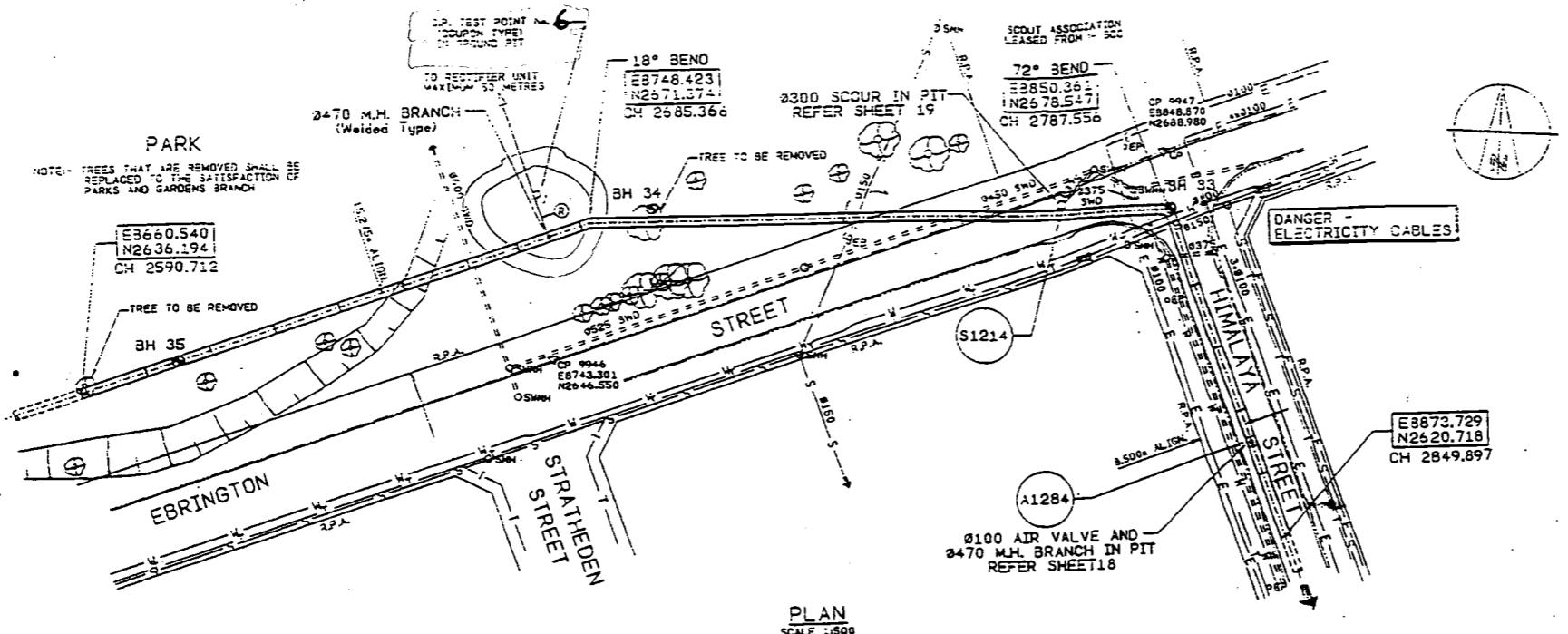
SCALE AS SHOWN IN' 0 OF 20 SHEETS
DRAWING NO. 486/4/6-W7089P AMEND 0



SCALE OF METRES
1:500

MASTER

- 61 THIS DRAWING SHALL BE READ IN COMBINATION WITH OTHER CONTRACT DOCUMENTATION AND DRAWINGS.
- 62 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE CURRENT STANDARDS AUSTRALIA OR SPECIFICATIONS ISSUED BY THE STATE, TERRITORY, LEWS OF THE RELEVANT BUILDING AUTHORITY.
- 63 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION DRAWINGS SHALL NOT BE SCALED.
- 64 ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
- 65 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
- 66 THE CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
- 67 ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE ENVIRONMENT AND SAFETY ACT, REGULATIONS AND GUIDELINES.
- 68 FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT.
- 69 MANHOLE COVERS AND SPINDELE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MANHOLE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL.
- PIPework
- P1 ISOLATED SOIL SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLANGED BRANCHES INCLUDING SEPARATION CONNECTIONS, SCOURS AND AIR TRVES.
- P2 UNLESS OTHERWISE INDICATED, ANCHOR BLOCKS SHALL BE UNREINFORCED.
- P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED AS PIPELINE FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.
- P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPework.
- P5 THE BOILY MECH. AND ELEC. SERVICES ARE TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.
- Trees
- T1 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

PLAN
SCALE 1:500

Ø1670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

IMPRINTED CURRENT CATHODIC PROTECTION

SOCKETS FACING

BRISBANE CITY COUNCIL LAND DEPARTMENT OF RECREATION AND HEALTH PARKS BRANCH EBRINGTON STREET HIMALAYA STREET

△ C.P. 9900 SURVEY CONTROL POINT 9900
BH 10 BOREHOLE No. 10

LEGEND

○ = = = = =	STORMWATER
— E — E —	ELECTRICITY
— S — S —	SAN SEWER
— T — T —	TELECOM
— G — G —	GAS
— W — W —	WATER
— R.P.A. —	REAL PROPERTY ALIGNMENT
△ C.P. 9900	SURVEY CONTROL POINT 9900
○ BH 10	BORERHOLE No. 10

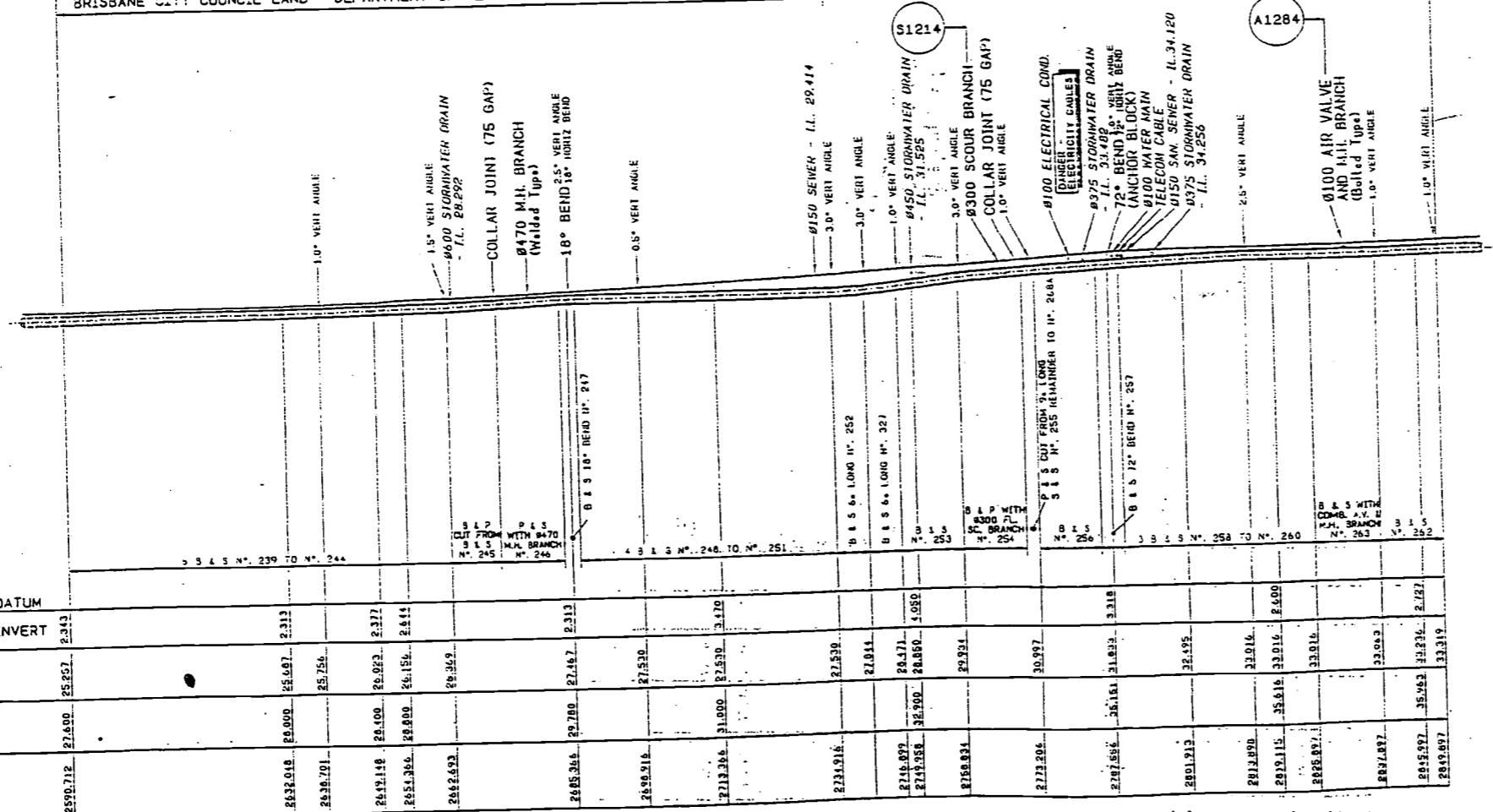
30m BELOW A.H. DATUM

DEPTH TO PIPE INVERT

INVERT OF PIPE

SURFACE LEVEL

PIPE CHAINAGE

LONGITUDINAL SECTION
CH. 2590.712 - 2849.897
SCALES HORIZONTAL 1:500
VERTICAL 1:500

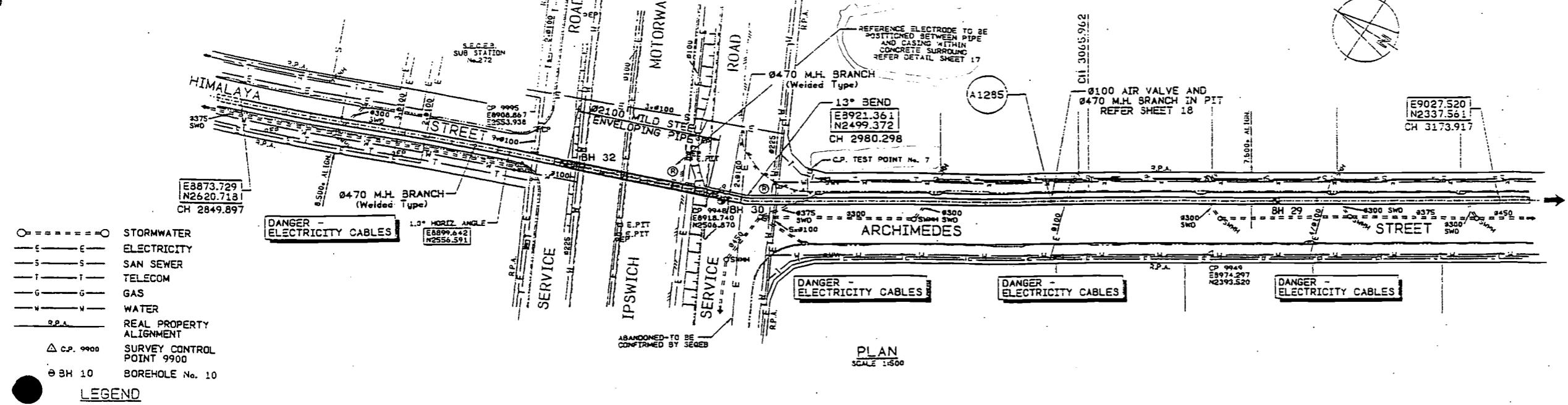
5 10 15 20 25
S 0 S 10 15 20 25
SCALE OF METRES
1:500

MASTER

DATE COMMENCED	DATE COMPLETED
SIGNATURE	DATE
NOTES AMENDMENT/ISSUE TO/AS FOR INITIALS	
AMENDMENT & ISSUE REGISTER	
MANAGER	DIRECTOR OF PLANNING & DESIGN
DATE	DATE
DIRECTOR OF CONSTRUCTION	DIRECTOR OF SEWAGE SERVICES/DESIGNATIONS
DATE	DATE
DESIGN L.G.S. OCT '94	ENGINEER IN CHARGE
DRAWN S.O.S. NOV '94	SUPERVISOR
TRACED	NO. SURVEY 2095
CHKD M.G.L. NOV '94	FIELD BOOK 7974/6
A.H. DATUM SURVEYED R.BOXALL	
CADD FILE NO. 46w7090	
JOB FILE NO. (71705/51288)	
BRISBANE CITY COUNCIL	
DEPARTMENT OF WATER SUPPLY & SEWERAGE	
PLANNING & DESIGN BRANCH	
PROJECT MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION	
TITLE WACOL TO OXLEY SECTION 1 1670 DIA. MSCL WATER MAIN PLAN AND LONGITUDINAL SECTION	
SCALE AS SHOWN IN 10 OF 20 SHEETS	
DRAWING NO. 486/4/6-W7090P	AMENDMENT 0

NOTES

- P1 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH OTHER CONTRACT DOCUMENTATION AND SPECIFICATIONS.
P2 MATERIALS AND WORKMANSHIP SHALL MEET THE REQUIREMENTS OF THE CURRENT STANDARDS, AUSTRALIA SPECIFICATIONS AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.
P3 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION. DRAWINGS SHALL NOT BE SCALE DRAWINGS.
P4 ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
P5 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
P6 THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE WORK AREA AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
P7 WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT REGULATIONS AND GUIDELINES.
P8 FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT.
P9 MAMMOL COVERS AND SPUDLLE BOXES FOR BOREHOLE PITS, AIR VALVE PITS, BOLTED MAMMOL PITS, SHALL BE SUPPLIED BY THE PRINCIPAL.
P10 INSULATED BOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL ISOLATION OF ALL PLUMBING FITTINGS INCLUDING TITICULATION CONNECTIONS, SCOUR AND AIR VALVES.
P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.
P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED WHEN PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.
P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.
P5 THE BOCT MECH. AND ELEC. SERVICES BRANCH TO BE CONTACTED PRIOR TO SACKFILLING FOR CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.
P6 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

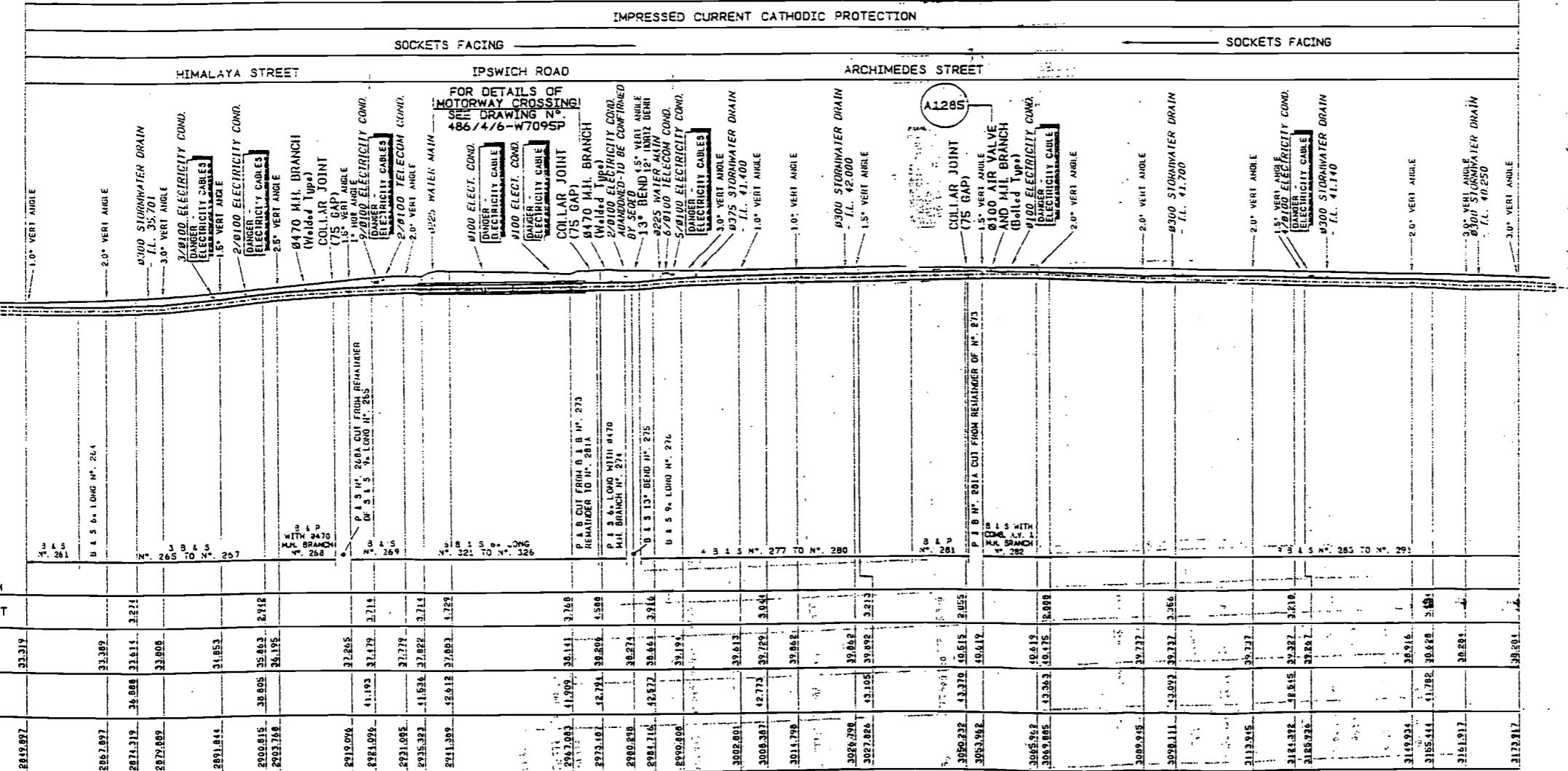


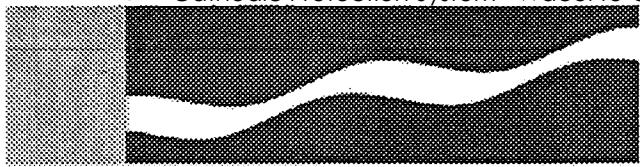
Ø1670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION-BONDED POLYETHYLENE COATED)

IMPRINTED CURRENT CATHODIC PROTECTION

SOCKETS FACING

SOCKETS FACING





Electrical Mechanical Water Meters
5 Bunya Street Eagle Farm Q 4009
Ph. (07) 3403 1849
Fx. (07) 3403 1898

20 September 1996

Brisbane Water Engineering Services

OPERATING MANUAL FOR:

WACOL TO OXLEY

TRUNK MAINS

Section 1

CATHODIC PROTECTION SYSTEM

CLIENT:

BRISBANE WATER.
WATER MAINTENANCE SECTION.

- (1.0) Introduction
- (2.0) Corrosion and Cathodic Protection
- (3.0) Mains Details
- (4.0) Cathodic Protection
- (4.1) Type of System
- (4.2) Rectifier
- (4.3) Cathode
- (4.4) Anodes
- (4.5) Test Points
- (4.6) Associated Drawings
- (4.7) Associated Standards
- (4.8) Government Regulations
- (5.0) Performed Testing
- (6.0) Conclusion
- (7.0) Maintenance

DRAWINGS

486/6/25-AA1C0021E

Standard Rectifier Wiring Diagram

(No Number)

Monthly Maintenance Program

486/4/6-W7080GD TO

486/4/6-W7101RC

Logan City Trunk Main Amplification

-(1.0) INTRODUCTION

Steel when immersed or covered in water has a tendency to corrode (or rust) as the oxidized form is more stable than the metal.

Because of this, precaution must be taken to stop or minimize the corrosion reaction to an acceptable level consistent with the design life of the structure. This is normally achieved by the use of protective coatings which control the corrosion reaction by isolating the steel from its surrounding environment.

However, it is not practical to achieve a perfect coating and coating damage will always occur with time. Because of this, corrosion may occur at imperfections in the paint coating, causing further deterioration in the coating as well as loss of metal.

As a result of this, the coating defects must be rectified by periodic maintenance or an additional method of protection used to prevent this deterioration and corrosion occurring. This additional protection is achieved by the cathodic protection system.

(2.0) CORROSION AND CATHODIC PROTECTION

Corrosion is an electrochemical process in that it is accompanied by a flow of electrical current.

Corrosion occurs on the surface of metals at active areas known as anodes, which are electrically continuous with less active or passive areas known as cathodes. The electric current flows from the anode through the electrolyte to the cathode, with the circuit being completed by the electrical continuity between the cathode and anode. In practice anodes and cathodes are generally part of the same metallic surface and individual anodic areas may be small.

In applying cathodic protection and external current is applied to the surface so that the entire surface to be protected acts as a cathode. This involves the use of an auxiliary anode and when the current flow from this anode is sufficient, no part of the structure acts as an anode.

An external source of direct current such as a transformer rectifier is used in conjunction with an anode consisting of material with a very slow corrosion rate.

While it is the flow of current which achieves the cathodic protection of the surface it is impractical to measure these currents over individual anodic areas to determine when cathodic protection has been achieved. However, with the flow of cathodic protection current, the structure becomes more negative with respect to the surrounding electrolyte. Because of this, it is possible to state values of metal/electrolyte potential at which corrosion does not occur. This metal/electrolyte potential is generally measured against a standard reference electrode which allows a reproducible potential at which corrosion does not occur to be quoted.

(3.0) MAINS DETAILS

Size: Existing 600 and new 1670 Dia mild steel cement lined.

Note The new main is protected in parallel with DUCIE st system and is controlled from the rectifier in DUCIE st.

Coating: Tar Epoxy. /Fusion bonded polyethelene

Length: Appox 3.28 Km.

Location: Wacol Station rd to Bernoulli st Valve (A1277) 300M along Wolston rd (unformed)to (Valve A1292). Bernoulli st 10M from Archerfield rd

Construction.

Drawings:

486/4/6-W7080GD

486/4/6-W7101RC

DUCIE St. C.P. System

- (4.1) Type of Cathodic Protection: Impressed Current.
- (4.2) Rectifier: Standard 25 Volt, 25 amp direct current output enclosed in a stainless steel switchboard. Rectifier has a 240V supply from Ducie st Electricity pole . The rectifier is located in Ducie st. In the park.
- (4.3) Cathode: The cathode point is located on the 600 Dia mains, 2M in front of the rectifier and on the 1670 Dia mains directly to the rear of the rectifier across the park next to Ebrington st. The cathode point is where the cabling from the rectifier is attached to the structure under cathodic protection.
- (4.4) Anodes: Two 1500 x 75mm silicone iron anodes were installed approximately 200 metres from the rectifier in the center of the park in a vertical bed. The anodes were firstly packaged with cokebreeze thereby improving anode – ground resistance. The anodes are identified by a marker label fixed to the distribution pit lid.
- (4.5) Test Points: Test points are installed on cathodically protected structures to enable testing to ensure full protection of the mains. On these mains eight test points have been installed and their locations can be identified from the layout drawing.
- (4.6) Associated Drawings:
Cathodic Protection Details – 2/14.213
Cathodic Protection Test Point Details – 2/14.199
Standard Rectifier Wiring Diagram – 486/6/25-AA1C0021E
Standard Vertical Groundbed Details – 486/6/25-AA1C0024E
- (4.7) Associated Standards:
AS 3000 1986 Australia Wiring Rules
AS 2832.1 1985 Pipes, Cables, Ducts, Guide to Cathodic Protection, Part One.
- (4.8) Government Regulations:
Queensland Electricity Acts and Regulations.

(5.0)

- (1) Natural Potential Survey.
- (2) Testing of Insulated Flanges, Joints.
- (3) Soil Resistance Testing.
- (4) Current Drain Survey.
- (5) Pipe Coating Anomaly Survey.
- (6) Rectifier Loop Resistance.
- (7) Foreign Structure Interference Survey and Mitigation.
- (8) Final Potential Survey and Commissioning.

(6.0) **CONCLUSION**

Full Cathodic protection has been achieved on this section of trunk mains. The cathodic protection system is registered with the Queensland Electricity Commission and has approval to operate.

(7.0)

MAINTENANCE

The cathodic protection system is maintained on a monthly basis after commissioning. These checks involve testing rectifier operation and recording of pipe to soil potentials.

CPS Monthly Maintenance Details.

Required:

- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.

Labour:

One tradesperson, one vehicle. 20 minutes per site.

Procedure:

- 1/ Identify installation.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Comments.
- 6/ Log entry.

CPS 6 Monthly Maintenance Details.

Required:

- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.
- 3/ Set of tools. (Electricians)
- 4/ Multimeter.
- 5/ DC clampmeter.
- 6/ Copper sulphate reference cell and leads.
- 7/ Cleaning equipment.
- 8/ Gatic cover lifters.

Labour:

One tradesperson electrical, one laborer, one vehicle.
Two hours per site.

Procedure:

- 1/ Identify system.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Record "on" potentials for all test points.
- 6/ Record "instant off" potentials for all test points.
- 7/ Record "off" potentials for all test points.
- 8/ Perform loop resistance and record.
- 9/ Check and record anode string currents.
- 10/ Comments.
- 11/ Log entry.

CPS 60 Monthly Maintenance Details.

Required:

- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.
- 3/ Set of tools. (Electricians)
- 4/ Multimeter.
- 5/ DC clampmeter.
- 6/ Copper sulphate reference cell and leads.
- 7/ Cleaning equipment.
- 8/ Gatic cover lifters.
- 9/ Rectifier load bank.
- 10/ PCS2000 Detection Equipment.

Labour:

One tradesperson electrical, one laborer, one vehicle.
Eight hours per site.

Procedure:

- 1/ Identify system.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Record "on" potentials for all test points.
- 6/ Record "instant off" potentials for all test points.
- 7/ Record "off" potentials for all test points.
- 8/ Perform loop resistance and record.
- 9/ Check and record anode string currents.
- 10/ Load test rectifier for 10 minutes.
- 11/ Check all switchboard and testpoint terminals for tightness.
- 12/ Check all switchboard and testpoints are labelled and I.D. tags attached.
- 13/ Check plans are correctly drawn and modify if necessary.
- 14/ Remove and inspect anodes.
- 15/ Recheck all interference (CPS) bleeds.
- 16/ Pipecamp structure if applicable.
- 17/ Apply for "continue to operate" permit if applicable.

Brisbane Water Engineering Services

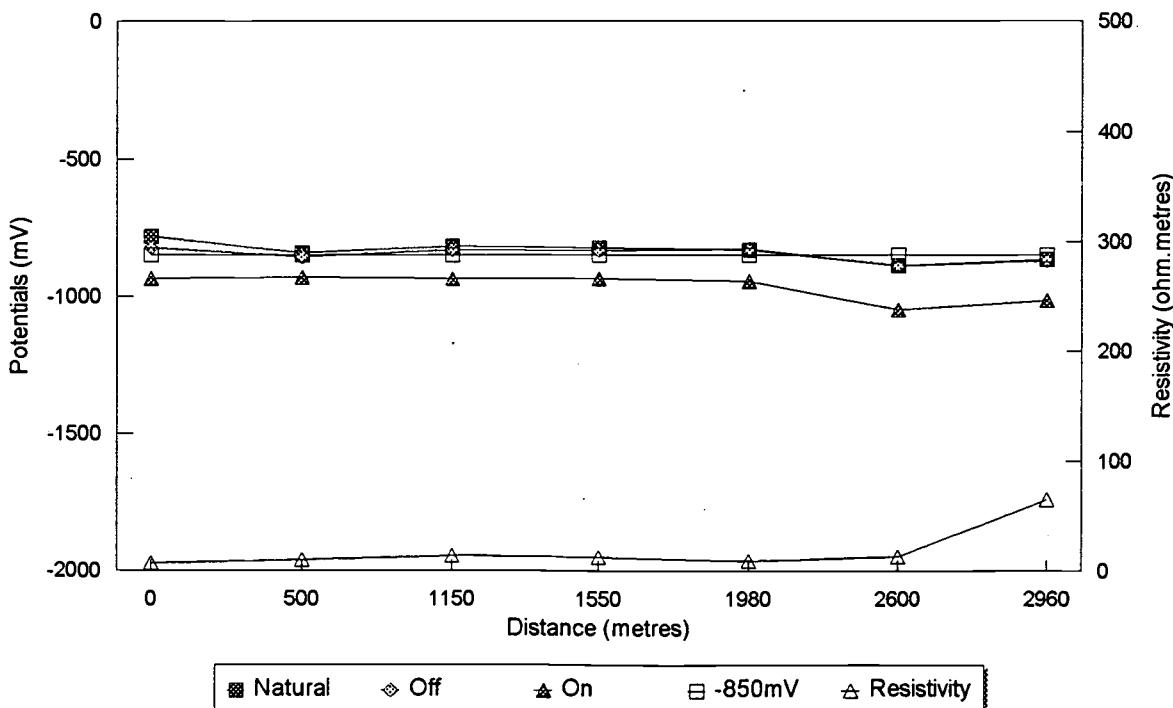
CP Form No. 23

Electrical Engineering Unit**Cathodic Protection System Potential Recording Form**

Project _____

Date _____

Test Point number	Distances to T.P. (metres)	Potentials to CuSO ₄			Resistivities at 2 metres (ohm.metres)
		Natural (mV)	Off (mV)	On (mV)	
1	0	-783	-824	-936	6.5
2	500	-842	-857	-931	9.98
3	1150	-818	-831	-936	13.91
4	1550	-823	-833	-936	12.61
5	1980	-832	-828	-946	9.1
6	2600	-889	-890	-1049	13
7	2960	-866	-870	-1014	65
8	3280	-888	-891	-1004	52
9					
10					
11					
12					
13					
14					

Graph of potentials and resistivity vs pipelength

Rectifier located at 0M.

Brisbane Water Engineering Services**Electrical Engineering Unit**

Ph. 34031838 Fx. 34031839

5 Bunya Street

Eagle Farm Q 4009

Cathodic Protection System Loop Resistance

Date: 20 September 1996

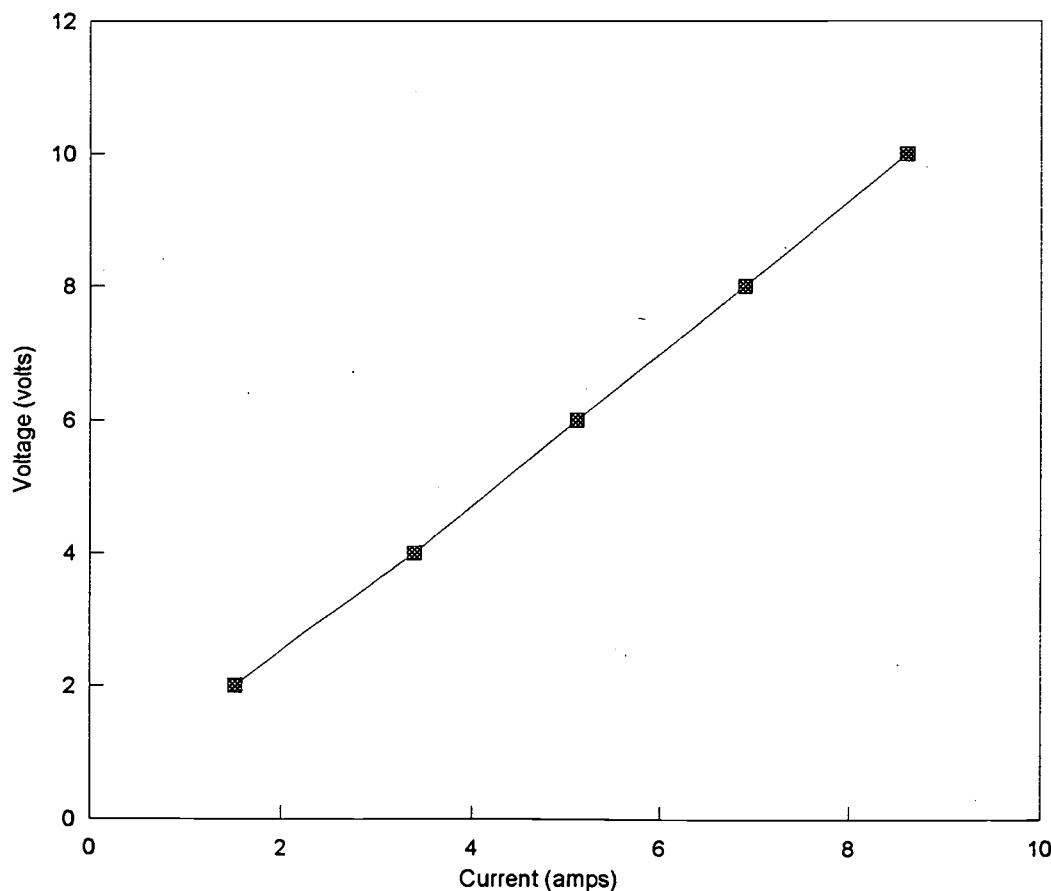
Cathodic Protection System: Wacol to Oxley section 1

System Operating Volts: 7.9 System Operating amps

6

Test Voltage: (volts)	Test Current: (amps)
2	1.5
4	3.4
6	5.1
8	6.9
10	8.6

Loop Resistance (ohms)
1.142857

Graph of System voltage vs current.

Brisbane Water Engineering Services**Electrical Engineering Unit****Cathodic Protection System General Information Form**Project Wacol to Oxley Sect 1Date 30-7-96LOCATION OF RECTIFIERSHARED with 600 TM.

NUMBER & STREET NAME:

Ducie St Park opp Stratheden

SUBURB:

Darra ~~197 R 16~~

POSTCODE:

4076

UBD MAP REFERENCE:

197 R 16SYSTEM INFORMATION:

INSTALLATION PROTECTED:

1670

DIAMETER of MAIN in mm:

4,000

LENGTH of MAIN in metres:

Medium Density Fusionbond Polyethylene

COATING on MAIN:

Fresh Water

PRODUCT CARRIED:

1996

YEAR MAIN INSTALLED:

From ~~Wacol~~ Wacol stn Rd
Wacol 197 E 15INSTALLATION EXTREMITIES:
To Bernoulie St Archerfield Rd.
198 B 19.

CPS NUMBER:

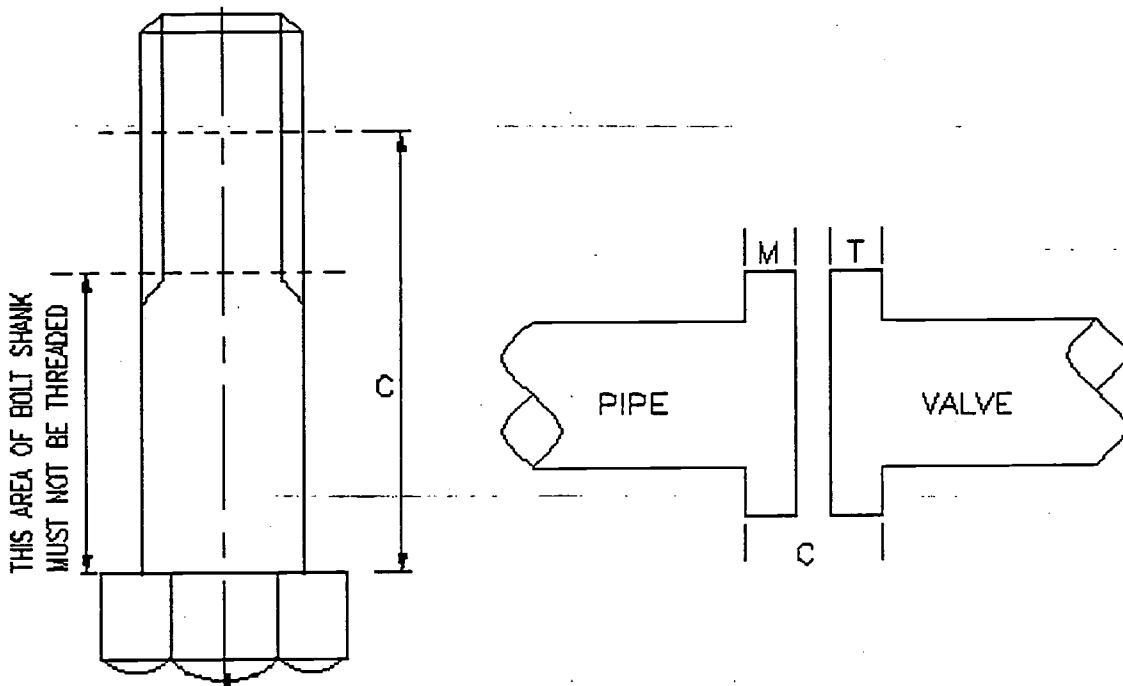
DATE C.P. COMMISSIONED:

DRAWING NUMBER:

H.V. LINE CROSSINGS:

FOREIGN STRUCTURES in AREA:

GasH.V. 110 KV SEQEB LineTelecomCOMPILED BY

Electrical Engineering Unit**Insulated Bolt Details Form**Project Wacol to OxleyValve No. TP 8 1670 Pipe 1286Date 30-7-96

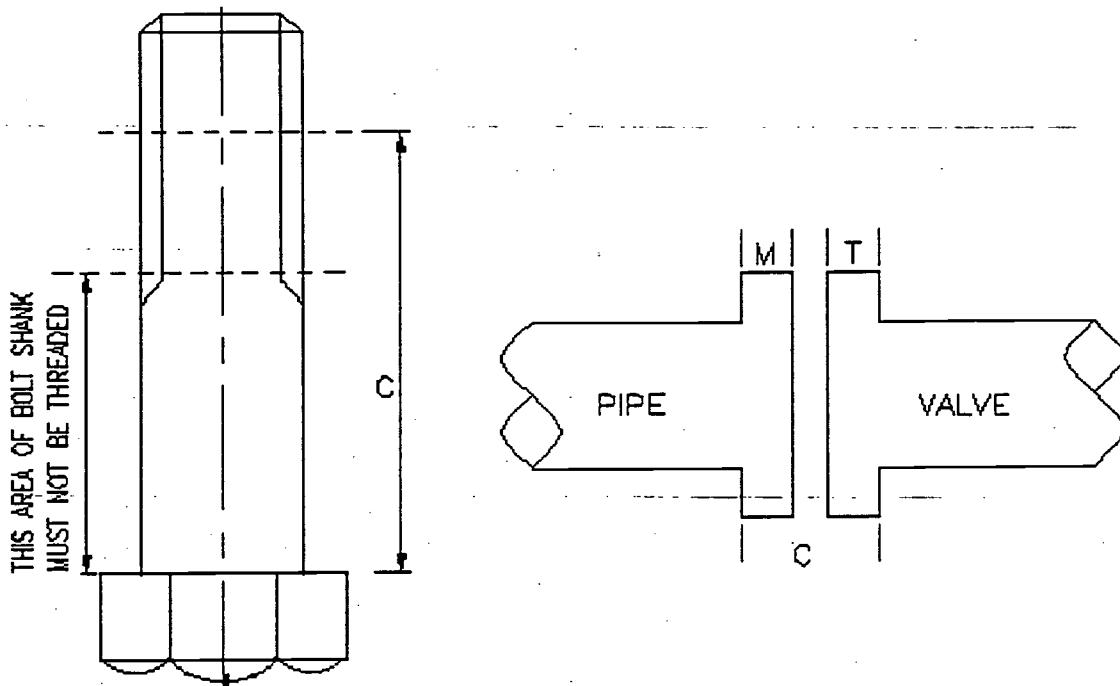
M	50
T	50
C	3
Diameter of Bolt	32
Diameter of Flange Hole	35
No. of Bolts per Flange	32
Total No. Bolts	64
Total No. Mylar Washers	120

M = Thickness of Mild Steel Flange

T = Thickness of Valve Flange

C = Length of Sleeving or Coating

CHECKED BY J.T.

Electrical Engineering Unit**Insulated Bolt Details Form**

ProjectWacol to Oxley.....

Valve No. TP 1. A1277

Date 30 - 7 - 96

M	50 mm
T	50 mm
C	3 mm
Diameter of Bolt	32 mm
Diameter of Flange Hole	35 mm
No. of Bolts per Flange	32 mm
Total No. Bolts	64.
Total No. Mylar Washers	120

M = Thickness of Mild Steel Flange

T = Thickness of Valve Flange

C = Length of Sleeving or Coating

CHECKED BYJ.T.....

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1

Unit Reading 7.9 V 6 A

Date 28-8-96

	Reading	Test Point I.D.	Location	Swing
On	-525	FH	14. Himalaya. St	-14
Off	-511			
On	-514	Water Meter	opp 12. "	+7
Off	-521			
On	-532	MEN	"	-10
Off	-522		Pole 28203	
On	-552	Fence 1	Seq eb Sub stn Himalaya. St	-9
Off	-543			
On	-567	Fence 2	" " "	-2
Off	-565			
On	-491	Water Meter	13 Himalay. St	+1
Off	-492			
On	-442	Fence	9/7 " "	+3
Off	-445			
On	-465	Fence	7 " "	-10
Off	-455			
On	-524	Fence	24 Eberington	-3
Off	-521			
On	-570	Water Meter	" "	-18
Off	-552			
On	-537	Water Meter	20 " "	-16
Off	-521			
On	-526	Water Meter	16 " "	+1
Off	-527			
On	-579	Water Meter	14 " "	-12
Off	-567			
On	-579	FH	" "	+1
Off	-580			
On				
Off				

TESTED BY J. S.

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

ProjectWacol to Oxley Sect.1

Unit Reading 7.9 Volts 6 Amp Date 28-8-96

	Reading	Test Point I.D.	Location	Swing
On	-283	Retic Valve	Cnr Stratheden Ebrington	+6
Off	-289		" "	00
On	-107	Water Meter	" "	00
Off	-107		" "	00
On	-474	Water Meter	Cnr Stratheden Ipswich	+1
Off	-474		" "	00
On	-424	FH	" "	-1
Off	-423		" "	00
On	-626	MEN	" "	+1
Off	-627		Pole 37581	00
On	-222	Retic Valve	Cnr Stratheden Ebrington	-1
Off	-221		" "	00
On	-185	Water Meter	9 Stratheden	-3
Off	-182		" "	00
On	-184	FH	Ebrington 40/42	+1
Off	-185		" "	00
On	-103	Water Meter	40 " "	+5
Off	-108		" "	00
On	-558	Fence	40/38 "	-4
Off	-554		" "	00
On	-640	MEN	OPP 40 " Pole 62141	-21
Off	-619		" "	00
On	-609	Water Meter	36 "	-39
Off	-570		" "	00
On	-456	FH	32 "	-2
Off	-454		" "	00
On				
Off				
On				
Off				

TESTED BYJ.S.....

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect. 1Unit Reading 7.9 V 6ADate 27-8-96

	Reading	Test Point I. D.	Location	Swing
On	-605	Fence	Socker Ground Cnr Ipswich Archerfield.	-5
Off	-600			
On	-477	Light Pole	NW. " "	00
Off	-477			
On	-465	Light Pole	SW " "	-2
Off	-463			
On	-433	Property Pole	" "	00
Off	-433			
On	-511	Light Pole	SE " "	+5
Off	-516			
On	-316	Water Pipe		00
Off	-316			
On	-473	MEN	Archerfield Rd. Pole 23085 ABx1883	+6
Off	-479			
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				

TESTED BY J. J.

Brisbane Water Engineering Services**Electrical Engineering Unit****Cathodic Protection Interference Survey Results Form**

Project Wacol to Oxley Sect 1 Unit Reading 7.9V 6A Date 23.8.96

	Reading	Test Point I.D.	Location	Swing
On	-531	Fence	Transformer Marker Archerfield/Boundary	00
Off	-531			
On	-428	MEN	Archerfield Rd. Pole 23086	+9
Off	-437			
On	-491	FH	" "	+1
Off	-492			
On	-598	MEN	" " A/B Pole 23087	00
Off	-598			
On	-444	Light Pole	Bernoulie St 372537 Pole	00
Off	-444			
On	-748	Light Pole	" " 372538 Pole	-6
Off	-742			
On	-687	Fence	P&O Catering	+6
Off	-693			
On	-605	Retic Valve	" "	00
Off	-605			
On	-596	Fence	Archimedes and Bernoulie St	+1
Off	-597			
On	-557	FH	" "	00
Off	-557			
On	-552	Retic Valve	Pacific Rim Archimedes	+1
Off	-553			
On	-515	FH	" "	+1
Off	-516			
On	-407	Frame	Sub 12. Seqeb Archimedes	00
Off	-407			
On	-605	Fence	Thrifty Hire Cnr Ipswich / Archimedes	-5
Off	-600			
On				
Off				

TESTED BY JJ

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1 Unit Reading 7.9V 6A Date 22.8.96

	Reading	Test Point I. D.	Location	Swing
On	-455	EXT	Park @ end of	
Off	-464	HWS	Ducie ST.	+9
On	-344	Leg 707	Seq/eb HT Tower	
Off	-345		in Park near Ipswich Rd	+1
On	-368	Leg 7198	" "	-1
Off	-367		" "	-1
On	-353	Leg 7198 Rear	" "	-1
Off	-352		" "	-1
On	-356	Leg 707 Rear	" "	-1
Off	-355		" "	-1
On	-473	Leg 167	Seq/eb HT Tower	
Off	-469		in Park near Rail line	-4
On	-381	Leg 7198	" "	-5
Off	-376		" "	-5
On	-470	Leg 167	" "	-4
Off	-466	Rear	" "	-4
On	-433	Leg 7198	" "	-6
Off	-427	Rear	" "	-6
On	-760	Railing	Railing front of	
Off	-761		club hse Nth end	+1
On	-30	Irrigation Pipe	between small and	
Off	-30		Large Goal Posts	00
On	-860	Goal Posts	Small Posts direct	
Off	-861		and Loose in Ground	+1
On	-882	Goal Posts	Large @ Nth end	00
Off	-882			
On				
Off				
On				
Off				

TESTED BY J.J

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1Unit Reading 7.9 V 6 ADate 21.8.96

	Reading	Test Point I. D.	Location	Swing
On	-553	Water Meter	74 Station Rd.	-3
Off	-550			
On	-503	Retic Valve	Cnr Harington and Station Rd.	00
Off	-503			
On	-426	Water Meter	10 Harington	00
Off	-426			
On	-405	F H	20 "	-2
Off	-403			
On	-359	Water Meter	" "	00
Off	-359			
On	-713	Fence	28/24 "	+1
Off	-714			
On	-463	Water Meter	32. "	-4
Off	-459			
On	-416	F H	" "	-1
Off	-415			
On	-488	Water Meter	40 "	-3
Off	-485			
On	-436	F H	48 "	00
Off	-436			
On	-394	Water Meter	Park @ end of Ducie St	+1
Off	-395			
On	-826	Fence	@ water Meter	-1
Off	-825			
On	-435	Power Board Earth	Park.	+4
Off	-439			
On	-42	Earth Stake	Toilet Block	00
Off	-42			
On	-469	Tap	club House	+8
Off	457			

TESTED BY JJ

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1.

Unit Reading 7.9 V 6A

Date 20.8.96

	Reading	Test Point I. D.	Location	Swing
On	-384	Water Meter	68 Harington	00
Off	-384			
On	-395	FH	64 "	00
Off	-395			
On	-481	MEN 7184	61 "	-8
Off	-473			
On	-460	Water Meter	Cnr Stratheden and Harington	-8
Off	-452			
On	-332	Water Meter	43 Ducie St	+3
Off	-335			
On	-323	FH	" "	00
Off	-323			
On	-528	Water Meter	37 "	-13
Off	-505			
On	-511	Water Meter	29 "	-8
Off	-503			
On	-496	FH	27 "	00
Off	-496			
On	-124	Fence	21/19 "	-1
Off	-123			
On	-400	Water Meter	19 "	00
Off	-400			
On	-520	Fence	17	+1
Off	-519			
On	-395	Water Meter	Cnr Station Rd Ducie	+1
Off	-396			
On	-520	FH	" " "	00
Off	-520			
On	-627	Fence	66/70 Station Rd.	+3
Off	-630			

TESTED BY J.T

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1 Unit Reading 7.9 V. 6A Date 19-8-96

	Reading	Test Point I. D.	Location	Swing
On	-639	Fence	85/87 Ducie St	-6
Off	-633		"	
On	-447	Water Meter	87 "	-9
Off	-438		"	
On	-396	MEN Pole	" "	-3
Off	-393		"	
On	-424	Water Meter	97 "	-4
Off	-420		"	
On	-618	Fence	cnr Strathaird/Ducie	00
Off	-618		"	
On	-407	Water Meter	95 Strathaird.	00
Off	-407		"	
On	-425	MEN A18	" "	00
Off	-425		"	
On	-427	Valve Retic	Cnr Strathaird. and. Harington	06
Off	-427		"	
On	-442	Water Meter	96 Harington	00
Off	-442		"	
On	-536	F H	92 "	00
Off	-536		"	
On	-626	Fence	84 "	+7
Off	-633		"	
On	-463	Water Meter	" "	00
Off	-463		"	
On	-488	Water Meter	76 "	00
Off	-488		"	
On	-463	F H	" "	00
Off	-463		"	
On	-473	Fence	76/74 "	+6
Off	-479		"	

TESTED BY J.J

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1. Unit Reading 7.9V 6A Date 19-8-96

	Reading	Test Point I. D.	Location	Swing
On	-753	Fence	26/24 Jervis St	+1
Off	-754			
On	-309	F H	18 "	00
Off	-309			
On	-325	Water Meter	" "	-1
Off	-324			
On	-363	Water Meter	cnr Ipswich/Service	-12
Off	-351			
On	-333	F H	" " "	00
Off	-333			
On	-332	MEN	" " "	-14
Off	-318		Power Pole	
On	-24	Water Meter	Park Jervis ST	-2
Off	-22			
On	-505	MEN	Ducie St Pole 1309. Supply Rect.	-28
Off	-477			
On	-588	Fence	51 Ducie St	-1
Off	-587			
On	-564	Water Meter	"	00
Off	-564			
On	-378	F H	59 "	00
Off	-378			
On	-486	Water Meter	63 "	00
Off	-486			
On	-475	F H	75 "	00
Off	-475			
On	-485	Water Meter	" "	00
Off	-485			
On	-509	Fence	75/79 "	-17
Off	-492			

TESTED BY J. J.

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1Unit Reading 7.9 V 6 A.Date 19-8-96

	Reading	Test Point I. D.	Location	Swing
On	-358	MEN	67 Strathaird St Power Pole	-3
Off	-355			
On	-408	MEN	cnr Strathnaver St Strathaird Pole 19364	-5
Off	-403			
On	-478	FH	"	+1
Off	-479			
On	-376	Water Meter	77 strathnaver St	00
Off	-376			
On	-426	MEN	Pole 62143 "	-13
Off	-413			
On	-769	Fence	75/69. Strathnaver St	-2
Off	-767			
On	-460	FH	69 "	00
Off	-460			
On	-462	Water Meter	"	+1
Off	-463			
On	-568	Retic Valve	cnr Jervis and Strathnaver Sts	00
Off	-568			
On	-366	FH	"	+1
Off	-367			
On	-265	Water Meter	48 Jervis St.	-3
Off	-262			
On	-459	"	42 "	+1
Off	-460			
On	-527	Fence	40/36 "	-6
Off	-521			
On	-433	Water Meter	36 "	-42
Off	-391			
On	-432	Water Meter	28 "	-30
Off	-402			

TESTED BY JJ

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Waco to Oxley Sect 1 Unit Reading 6 Amps Date 28-8-96

TESTED BY *J. S.*

Brisbane Water Engineering Services

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1 Unit Reading 6 Amps Date 28-8-96

	Reading	Test Point I.D.	Location	Swing
On	-34	Fence	Sanananda st. Sewerage P/stn.	00
Off	-34		"	+1
On	+548	Tap	Air breaker Pole 61843	00
Off	-549		Pipe across Creek Sanananda St. 350m	00
On	-415	MEN	Cnr Markham & Sanananda St.	00
Off	-415		"	00
On	-462	Pipe	"	00
Off	-462		"	00
On	-686	Fence	Cnr Markham & Sanananda St.	00
Off	-686		"	00
On	-363	FH	"	00
Off	-363		"	00
On	-354	water meter	54 Sanananda St	00
Off	-354		"	00
On	-484	"	46 "	00
Off	-484		"	00
On	-656	Fence	46 "	00
Off	-656		"	00
On	-349	water meter	44 "	00
Off	-349		"	00
On	-122	Water meter	32 "	00
Off	-122		"	00
On	-265	Water meter	18 "	00
Off	-265		"	00
On	-421	MEN DRA9.	Cnr Ipswich and Sanananda Pole 32158	+2
Off	-423		"	+1
On	-389	Lt Pole 371272	Cnr Ipswich and Sanananda 371272	+1
Off	-390		"	+1
On	-405	Shelta	Bus Stop opp 18 Sanananda St	00
Off	-405		"	00

TESTED BY J J

Brisbane Water Engineering Services

CP Form No. 21

Electrical Engineering Unit**Insulated Joint Testing Details Form**Project Wacol to Oxley Sect 1Date 30-7-96**DESCRIPTION****MAINS DETAILS:**

LOCATIONS:

Wacol Stn Rd. F 15 UBD

SIZE:

1670

MATERIAL:

MSCL

COATING:

Medium density Fusion bonded Polyethylene

VALVE No.

A 1277**IN GROUND TESTING** PITFlange A upstreamBOLT TO FLANGE RESISTANCE: > 200 ΩsNUMBER OF BOLT: 32FLANGE TO FLANGE RESISTANCE: 60 Ωs.

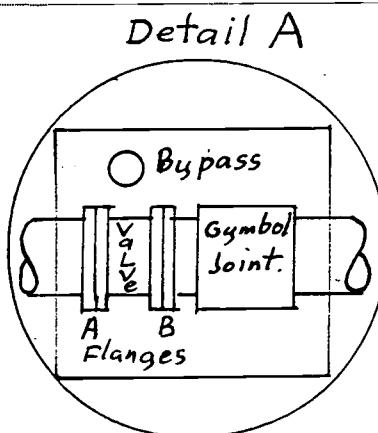
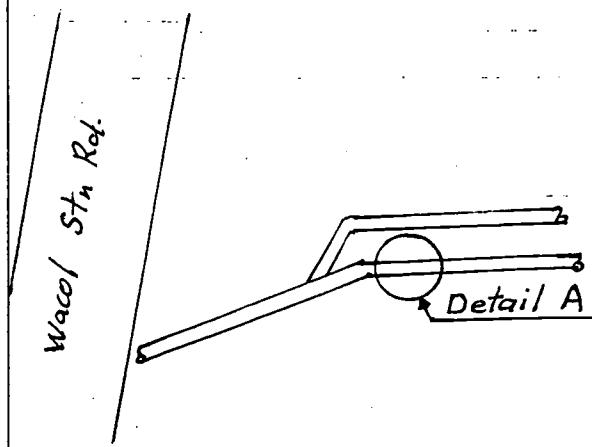
INSULATION CHECKER MODEL 702:

POTENTIAL DIFFERENCE TO REFERENCE CELL:PROTECTED SIDE: -1387 To CuCuSO₄ CellUNPROTECTED SIDE: -1343 To CuSO₄ Cell**ABOVE TESTING**

BOLT TO FLANGE RESISTANCE:

NUMBER OF BOLTS:

FLANGE TO FLANGE RESISTANCE:

COMMENTS / LOCATION DRAWINGTESTED BY J. J.

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**Project Wacol to Oxley Sect. 1Date 30-7-96TP Location Wolston Rd 197 F15TP No. 1Mains Size 1670 msclTP Type B + B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+151CuSo₄ REFERENCE TO PIPE-972ZINC TO CuSo₄-1120**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

6.5 ohm mtr

MEGGER READING

.5TEST NO 2

PIN SPACING

RESISTIVITY

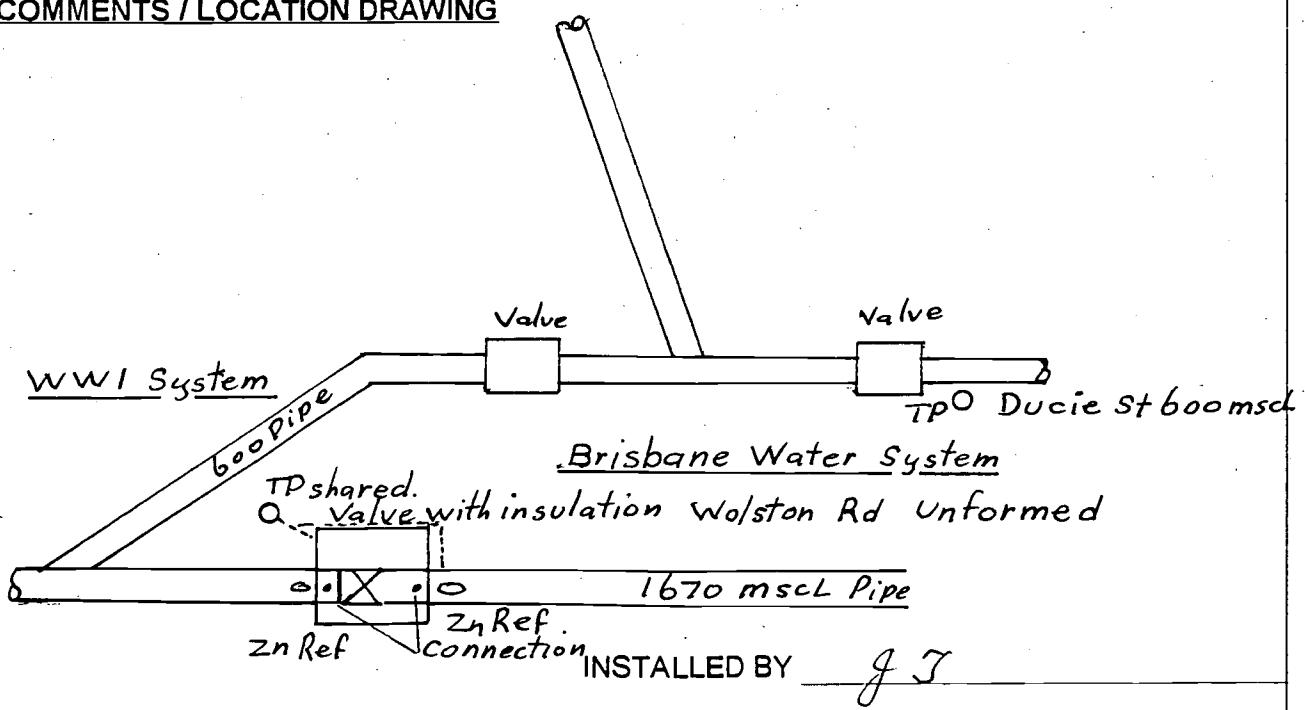
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**Project Wacol to Oxley Sect 1Date 30-7-96TP Location Wolston Rd 197 J 15TP No. 2Mains Size 1670 msclTP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+220CuSo₄ REFERENCE TO PIPE-842ZINC TO CuSo₄-1064**EARTH TESTING**TEST NO. 1

PIN SPACING

2RESISTIVITY 9.5 ohm mtr

MEGGER READING

.76TEST NO 2

PIN SPACING

RESISTIVITY

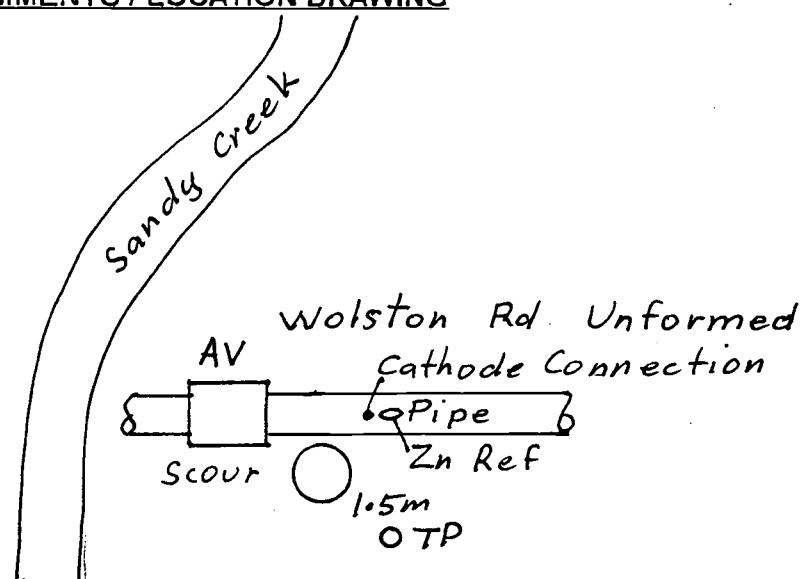
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

INSTALLED BY

JJ

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**

Project ...Wacol to Oxley Sect 1.....

Date30-7-96

TP Location Wolston Rd 197 m 16.....

TP No.3.....

Mains Size ...16.70 ms CL.....

TP TypeB.....

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+344

CuSo₄ REFERENCE TO PIPE

-818

ZINC TO CuSo₄

-1163

EARTH TESTINGTEST NO. 1

PIN SPACING

2

MEGGER READING

1.07

RESISTIVITY 14 ohm mtr

TEST NO 2

PIN SPACING

RESISTIVITY

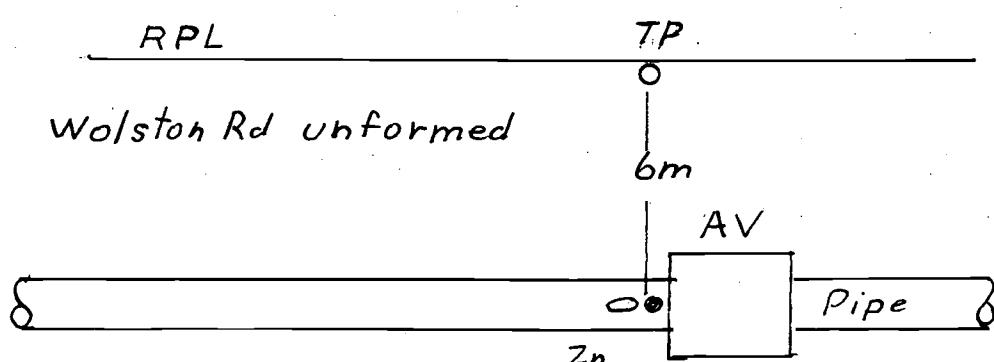
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

INSTALLED BY

JJ

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering FormProject Wacol to Oxley Sect. 1Date 30-7-96TP Location Sanananda St 197 N/16TP No. 4Mains Size 1670 MSCLTP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+ 317CuSo₄ REFERENCE TO PIPE- 823ZINC TO CuSo₄- 1140**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

12.6 ohm mtr.

MEGGER READING

.97TEST NO 2

PIN SPACING

RESISTIVITY

MEGGER READING

TEST NO 3

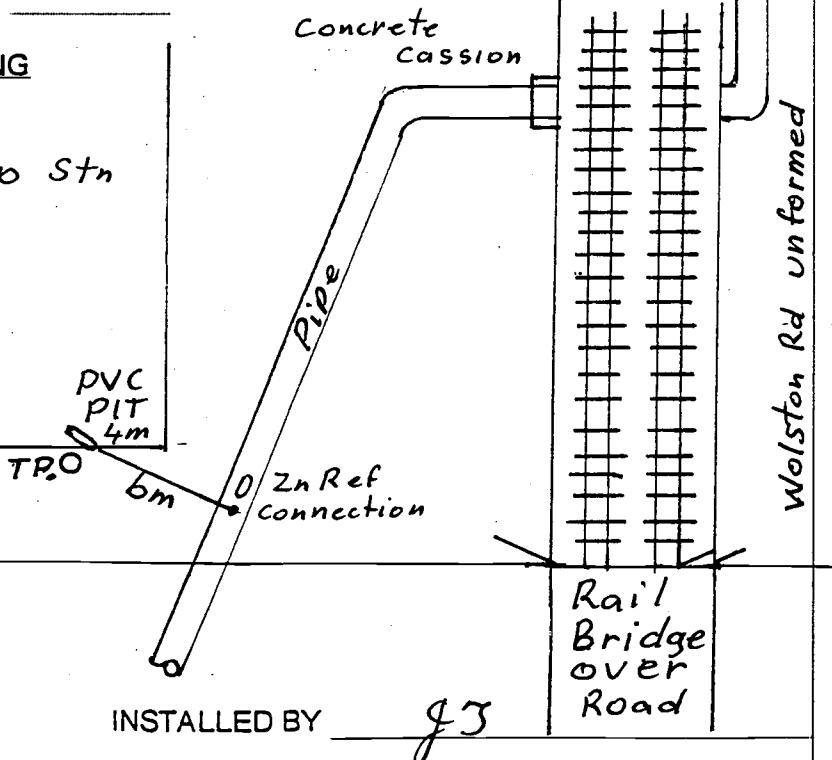
PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

Sewerage Pump Stn



Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**Project Wacol to Oxley Sect.1Date 30-7-96TP Location Centenary Hwy 198 Q16TP No. 5Mains Size 1670 m SCLTP Type BtSilver chloride
on Steel Cassion**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+336CuSo₄ REFERENCE TO PIPE-832ZINC TO CuSo₄-1169**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

9.1 ohm meter

MEGGER READING

.7TEST NO. 2

PIN SPACING

RESISTIVITY

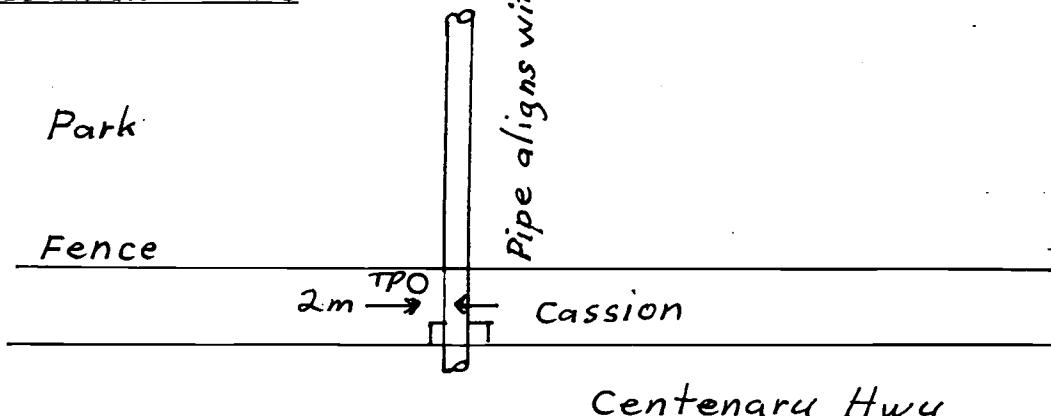
MEGGER READING

 TEST NO. 3

PIN SPACING

RESISTIVITY

MEGGER READING

 COMMENTS / LOCATION DRAWING

INSTALLED BY _____

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering Form

Project Wacol to Oxley Sect 1Date 30-7-96TP Location Ducie St 197 R16TP No. 6Mains Size 1670 msclTP Type CouponPOTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE)

1.3

ZINC REFERENCE TO PIPE

-33CuSo₄ REFERENCE TO PIPE-1049ZINC TO CuSo₄-1012EARTH TESTINGTEST NO. 1

PIN SPACING

2 m

RESISTIVITY

13 ohm mtr

MEGGER READING

1TEST NO 2

PIN SPACING

RESISTIVITY

MEGGER READING

 TEST NO 3

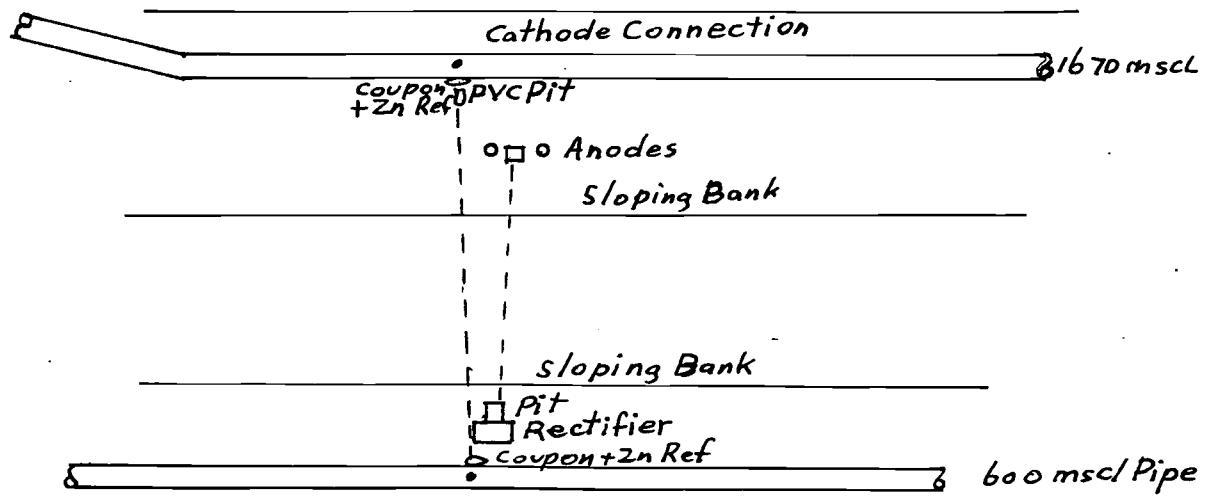
PIN SPACING

RESISTIVITY

MEGGER READING

 COMMENTS / LOCATION DRAWING

Stratheden St

Ebrington StDucie st

INSTALLED BY

J.J

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering FormProject Wacol to Oxley Sect 1 Date 30-7-96TP Location Archimedes 198 A 18 TP No. 7Mains Size 1670 M.S.C.L. TP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+256CuSo₄ REFERENCE TO PIPE-866ZINC TO CuSo₄-1122**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

65 ohm mtr

MEGGER READING

5TEST NO 2

PIN SPACING

RESISTIVITY

MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

Archimedes St

Ipswich Side Rd

Fence

TP O

←1.5m

Ipswich divided Rd.

Cassion Tunnled under Rd.

INSTALLED BY

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**

Project Wacol to Oxley Sect. 1

Date 30-7-96

TP Location Bernoulli St 198 B19

TP No. 8

Mains Size 1670 MSCL

TP Type B x 4

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE)

.05

ZINC REFERENCE TO PIPE

+140

CuSo₄ REFERENCE TO PIPE

-774

ZINC TO CuSo₄

-944

EARTH TESTINGTEST NO. 1

PIN SPACING

2

RESISTIVITY 104 ohm mtr

MEGGER READING

8

TEST NO. 2

PIN SPACING

RESISTIVITY

MEGGER READING

TEST NO. 3

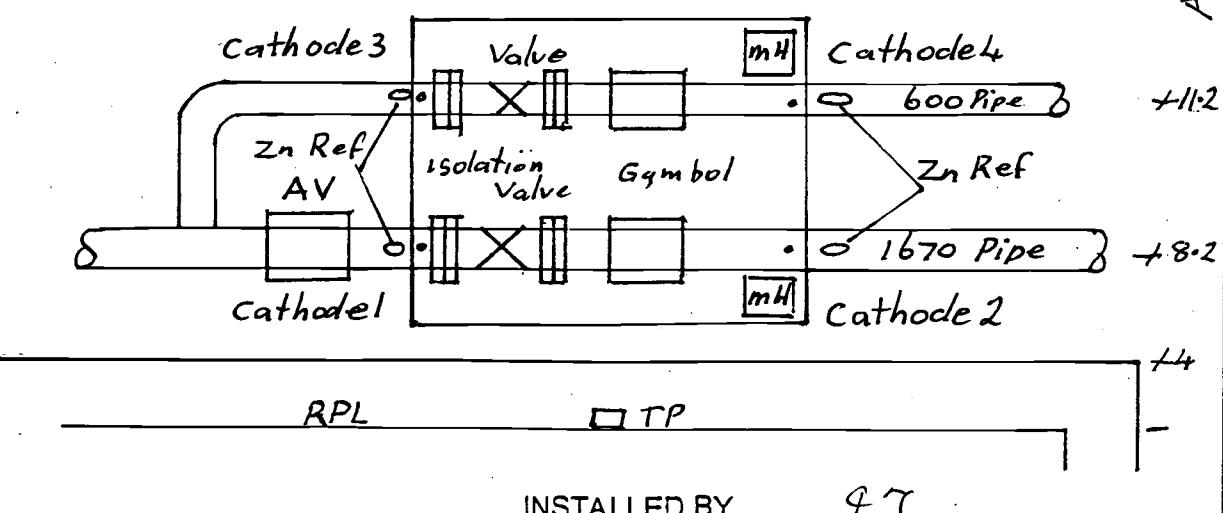
PIN SPACING

RESISTIVITY

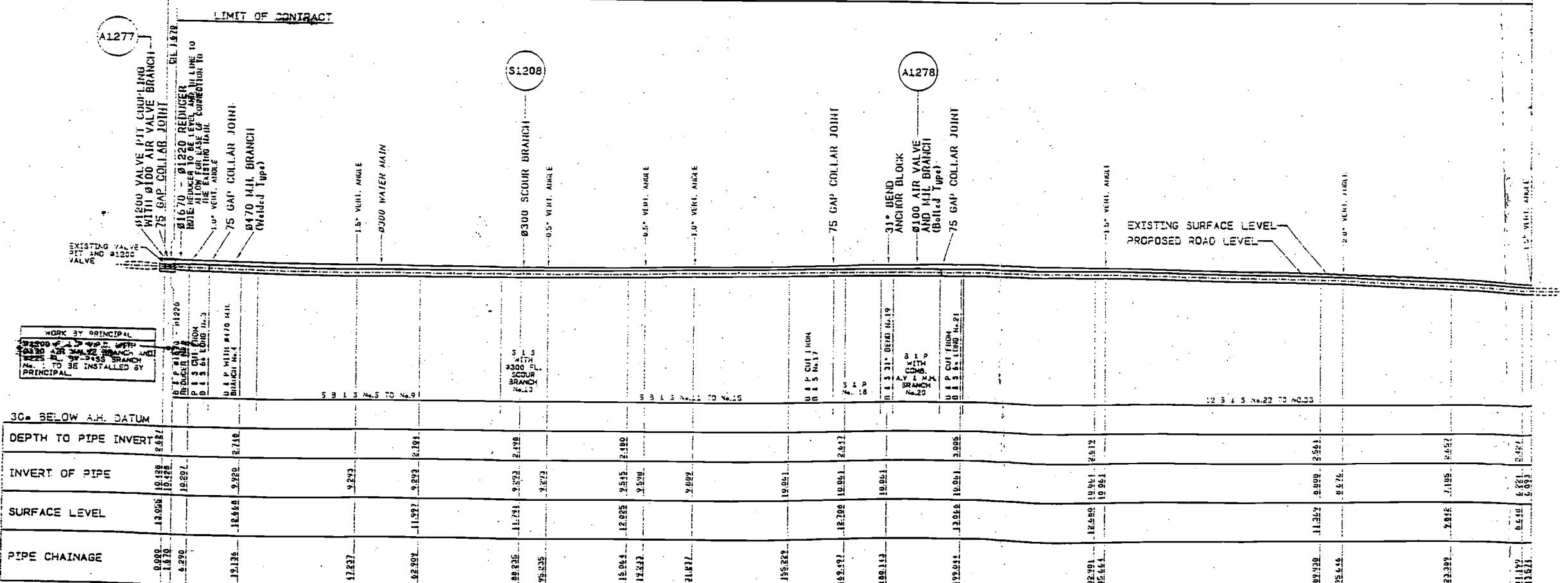
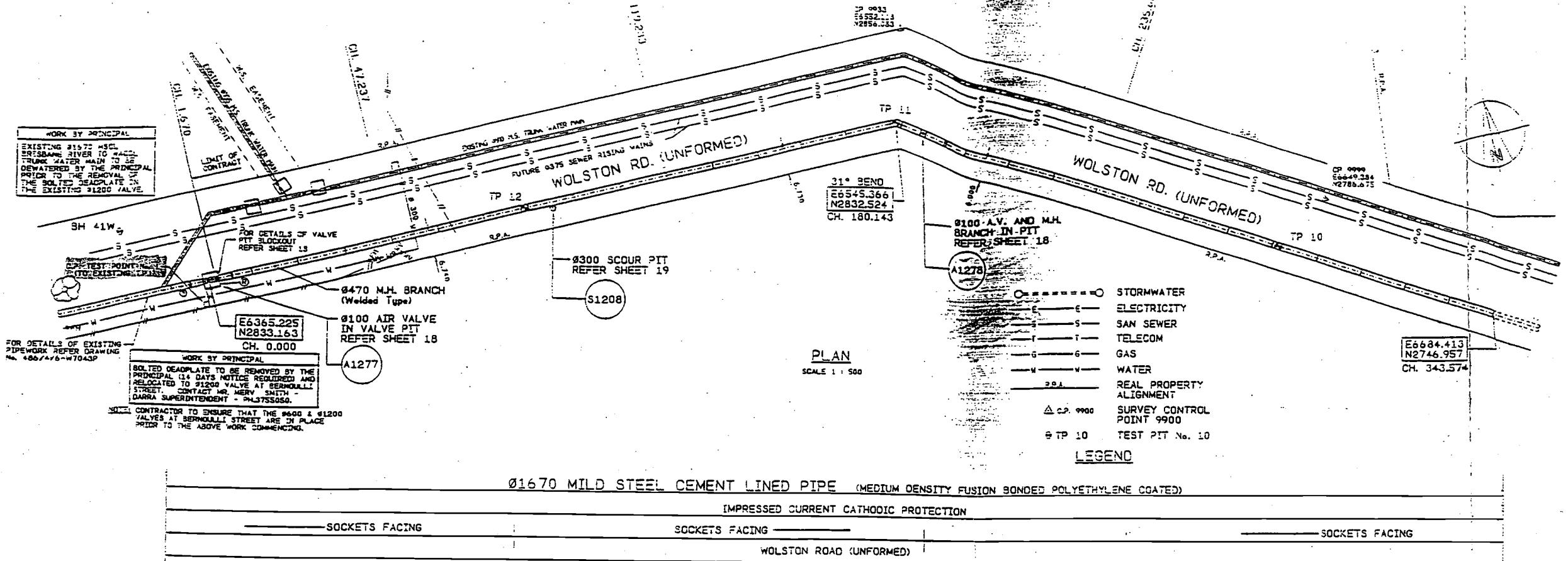
MEGGER READING

COMMENTS / LOCATION DRAWING

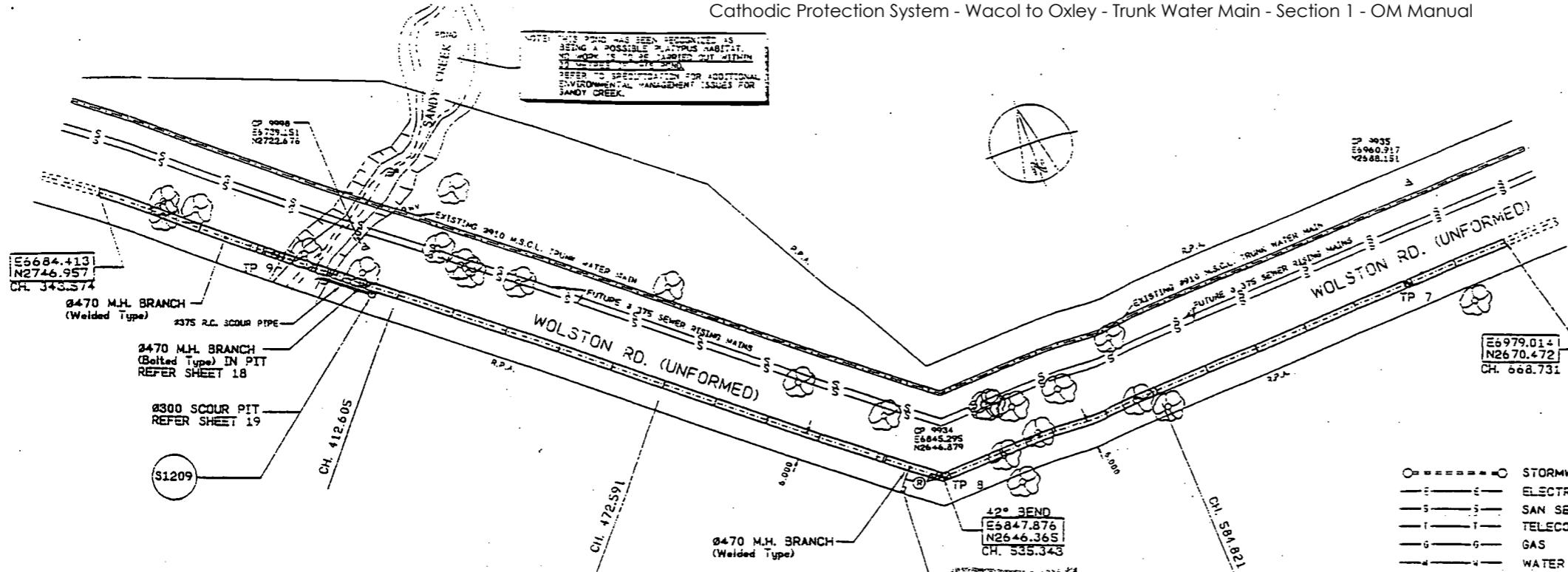
Bernoulli st



1. THIS DRAWING SHALL BE CONSIDERED AS PART OF THE CONTRACT DOCUMENTATION AND DRAWINGS.
2. MATERIALS AND WORKMANSHIP SHALL MEET APPROVED SPECIFICATIONS REQUIREMENTS OF THE CURRENT STANDARDS, PRACTICAL SPECIFICATIONS AND DRAWINGS BY THE RELEVANT BUILDING AUTHORITY.
3. THE CONTRACTOR SHALL VERIFY DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION. DRAWINGS SHALL NOT BE SCALLED.
4. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
5. NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
6. THE CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
7. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUAGGAS AND PUBLIC HEALTH INSPECTION ACT, REGULATIONS AND GUIDELINES.
8. FOR DETAILS OF BOREHOLE E.303 REFER TO THE GEOFISHERY REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.
9. MANHOLE COVERS AND SPINOLE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MANHOLE PITS SHALL BE SUPPLIED BY THE PRINCIPAL.
- P/WORK
- P1. INSULATED SIGHT SEAMS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL PLATED BRANCHES INCLUDING RETROGRADE CONNECTIONS, SCOURS AND AIR VALVES.
- P2. UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.
- P3. EXTERNAL COATINGS ARE NOT TO BE REMOVED WHEN PIPEWORK OR MANHOLES ARE SURROUNDED OR COVERED IN CONCRETE.
- P4. NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.
- P5. THE BOREHOLE E.303 AND ELEC SERVICES ARE TO BE CONTACTED PRIOR TO BACKFILLING IN AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.
- P6. NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.



NOTES



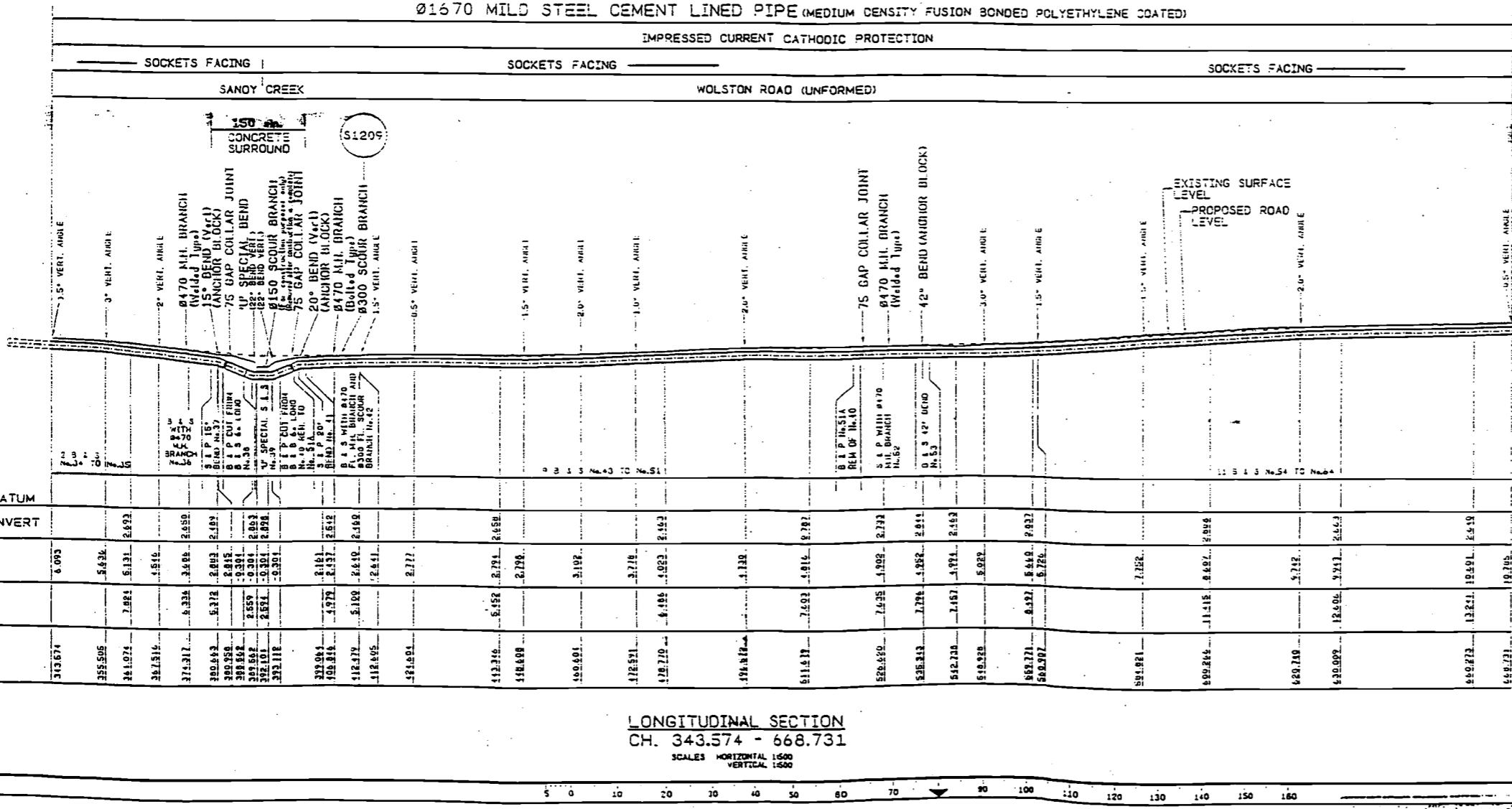
SCALE 1 : 500

Scale 1 : 500

O = = = = = O STORMWATER
 E — E ELECTRICITY
 S — S SAN SEWER
 T — T TELECOM
 G — G GAS
 4 — 4 WATER
 3 P.A. REAL PROPERTY
 ALIGNMENT
 △ C.R. 9900 SURVEY CONTROL
 POINT 9900
 @ TP 10 TEST PIT No. 10
 ✓ FENCE

01670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

IMPOSED CURRENT CATHODIC PROTECTION



LONGITUDINAL SECTION

CH. 343.574 - 668.731

SCALES HORIZONTAL 1:500

VERTICAL 1500

Digitized by srujanika@gmail.com

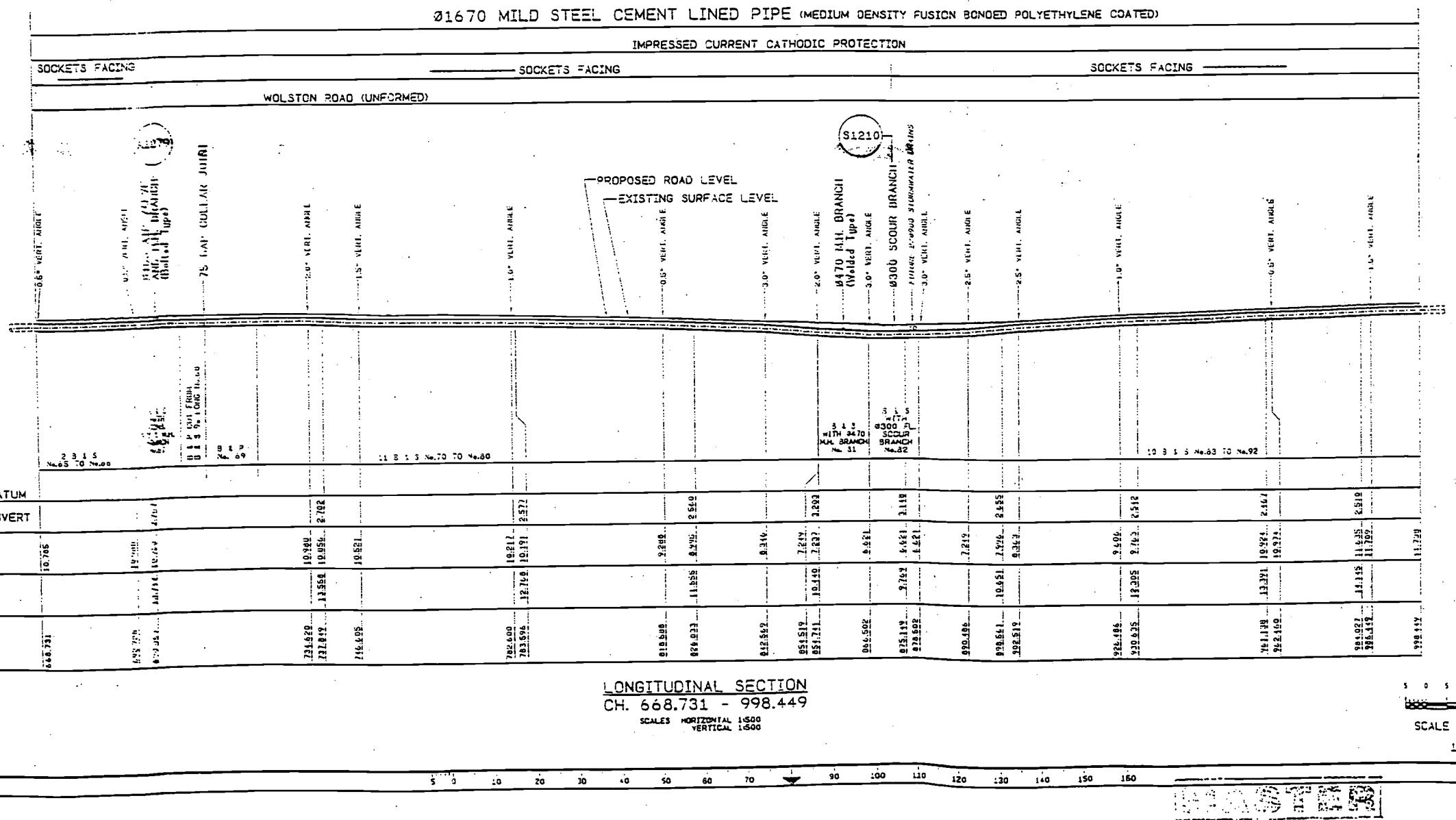
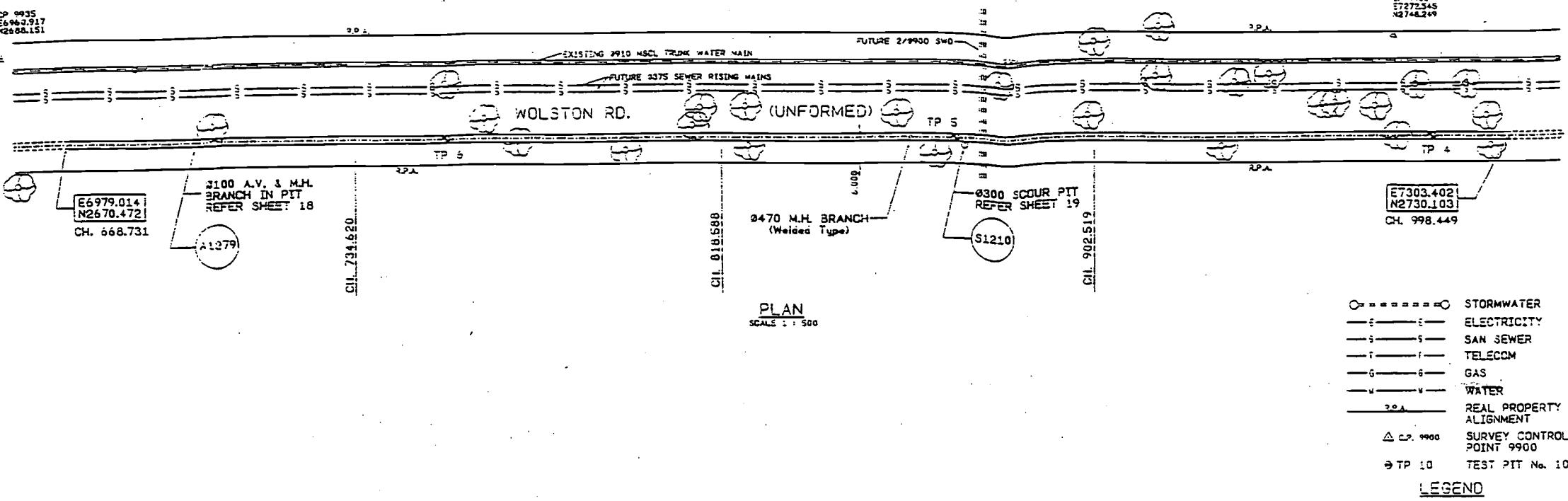
20 30 40 50 60

Journal of Health Politics, Policy and Law, Vol. 35, No. 4, December 2010
DOI 10.1215/03616878-35-4 © 2010 by The University of Chicago

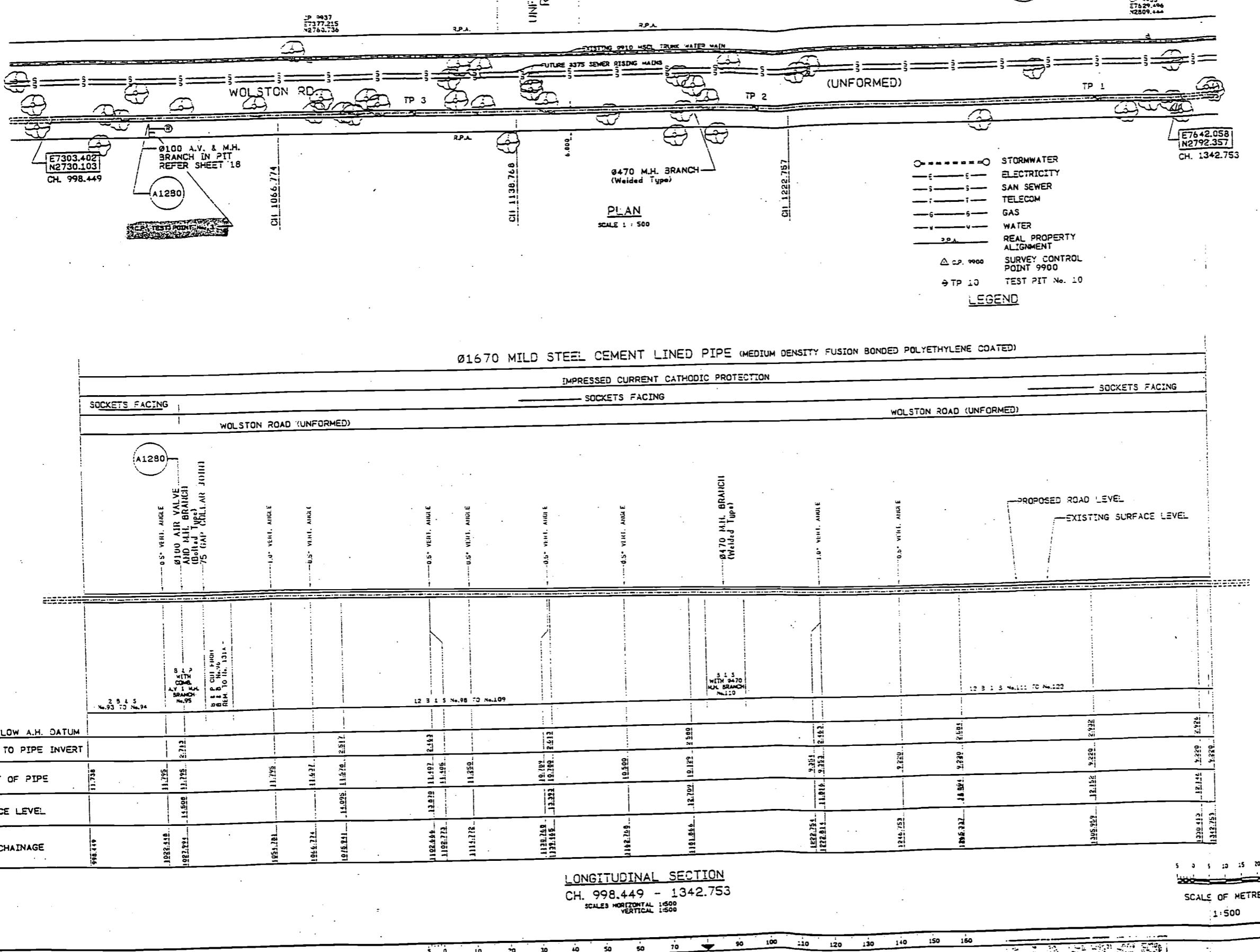
A scale bar at the top of the map shows distances from 0 to 25 meters. Below it, the text "SCALE OF METRES" and "1:500" is printed.

MAIN CONSTRUCTION DETAILS		
DATE COMMENCED	DATE COMPLETED	
SIGNATURE	DATE	
NOTABLY AMENDMENT/ISSUE TO ISSUE FOR INITIALS		
AMENDMENT & ISSUE REGISTER		
MANAGER	DIRECTOR OF PLANNING & DESIGN	
DATE	DATE	
DIRECTOR OF CONSTRUCTION	DIRECTOR OF SERVICES OPERATIONS	DIRECTOR OF SEWAGE SERVICES
DATE	DATE	DATE
DESIGN S.S.G. OCT '94	ENGINEER IN CHARGE	APPROVED BY PROJECT MANAGER
DRAWN S.S.G. OCT '94	SUPERVISOR	APPROVED BY PROJECT MANAGER
TRACED	SURVEY NO.	2095
CHKD V.G.L. NOV '94	FIELD BOOK	7074/5
A.H. DATUM	SURVEYED	2.80XALL
CADD FILE NO.	46W7083	
JOB FILE NO.	(71705/S/288)	
	BRISBANE CITY COUNCIL	
DEPARTMENT OF WATER SUPPLY & SEWERAGE		
PLANNING & DESIGN BRANCH		
PROJECT MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION		
TITLE WACC TO OXLEY SECTION 1 1670 DIA MSCL WATER MAIN PLAN AND LONGITUDINAL SECTION		
SCALE AS SHOWN INT 3 OF 20 SHEETS		
DRAWING NO. 486/4/6-W7083P		AMEND. 0

- G1 THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE APPROPRIATE DOCUMENTATION AND DRAWINGS.
- G2 ALL MATERIALS AND WORKSHIPS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT STANDARDS AND CODES AND THE BY-LAWS AND RELEVANT BUILDING AUTHORITY.
- G3 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION DRAWINGS SHALL NOT BE SCALED.
- G4 MY DISCREPANCY SHALL BE FORWARDED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
- G5 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
- G6 THE CONTRACTOR SHALL MAKE EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
- G7 ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKERS COMPENSATION AND SAFETY ACT, REGULATIONS AND GUIDELINES.
- G8 FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.
- G9 MANHOLE COVERS AND SPINDLE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MANHOLE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL.
- P1 INDICATED BOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLANGED BRANCHES INCLUDING RETICULATION CONNECTIONS, SCOURS AND AIR VALVES.
- P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.
- P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED FROM PIPE LINES UNTIL THEY ARE BURIED OR COVERED IN CONCRETE.
- P4 NO REINFORCEMENT IS TO BE PROVIDED TO OR MAKE CONTACT WITH THE PIPEWORK.
- P5 THE SOILS, MEAL AND ELEC. SERVICES BRANCHES TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.
- T1 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.



MATERIAL CONSTRUCTION DETAILS		
DATE COMMENCED	DATE COMPLETED	SIGNATURE DATE
NOTE: AMENDMENT/ISSUE TO/ISSUE FOR/HANDED		
AMENDMENT & ISSUE REGISTER		
MANAGER	DIRECTOR OF PLANNING & DESIGN	DATE
DIRECTOR OF CONSTRUCTION	DIRECTOR OF ENVIRONMENT & SERVICES	DIRECTOR OF OPERATIONS & DISTRIBUTION
DESIGN	DESIGN	DESIGN
DRAWN	DRAWN	DRAWN
TRACED	TRACED	TRACED
CHECKED	CHECKED	CHECKED
AIR DUTM	SURVEYED	RECORDED
CADD FILE NO.	486/4/6-W7084	486/4/6-W7084
JOB FILE NO.	486/4/6-S1256	486/4/6-S1256
PROJECT: MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION		
DRAWING NO: 486/4/6-W7084P AMENDMENT 0		



NOTES

GENERAL
 1 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH OTHER CONTRACT DOCUMENTATION AND DRAWINGS.
 2 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE STANDARDS, STANDARDS AUSTRALIA SPECIFICATIONS AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.

3 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION DRAWINGS SHALL NOT BE SCALED.

4 ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROGRESSION WITH WORK.

5 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

6 THE CONTRACTOR SHALL MAKE HIMSELF FULLY FAMILIAR WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND THE STRUCTURES DURING THE COURSE OF THE CONTRACT.

7 ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.

8 FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.

9 MAMMOL COVERS AND SPINDLE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MAMMOL PITS, SHALL BE SUPPLIED BY THE PRINCIPAL.

PIPework

P1 INSULATED BOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLANGED BRANCHES INCLUDING PETCOCK CONNECTIONS, SCOUR AND AIR VALVES.

P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.

P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED WHEN PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.

P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.

P5 THE 300's MECH AND ELEC SERVICES BRANCH IS TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE THE PUBLIC PROTECTION TEST PLATE OR OTHER FACILITIES ARE TO BE INSTALLED.

Trees

10 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

MAIN CONSTRUCTION DETAILS

DATE COMMENCED	DATE COMPLETED
SIGNATURE	DATE

INDICATE AMENDMENT/ISSUE TO ISSUE FOR INITIALS

AMENDMENT & ISSUE REGISTER

MANAGER	DIRECTOR OF PLANNING & DESIGN
DATE	DATE
DIRECTOR OF CONSTRUCTION	DIRECTOR OF OPERATIONS & DISTRIBUTION
DESIGN S.S.G. OCT '94	ENGINEER (LATERAL) IN CHARGE / 1995/
DRAWN S.S.G. OCT '94	SPREADING ENGINEER / 1995/
TRACED	SURVEY NO. R095
ONITE M.G.L. NOV '94	FIELD BOOK 7974/6
A.H. DATUM	SURVEYED R.BOXALL
CADD FILE NO.	46W7085
JOB FILE NO.	(17)705/S(284)

BRISBANE CITY COUNCIL
DEPARTMENT OF WATER SUPPLY & SEWERAGE PLANNING & DESIGN BRANCH

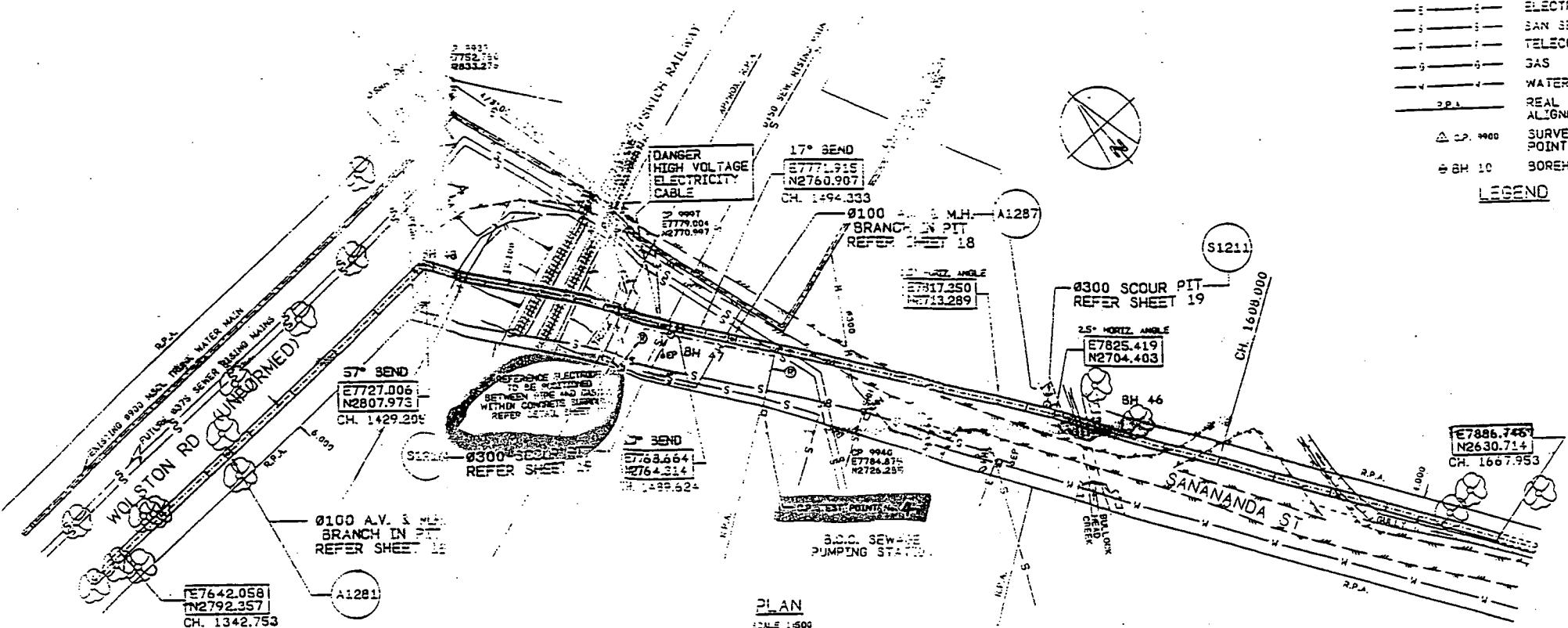
PROJECT
MAJOR DISTRIBUTION MAINS
LOGAN CITY TRUNK MAIN
AMPLIFICATION

TITLE
WACOL TO OXLEY SECTION 1
1670 DIA MSCL WATER MAIN
PLAN AND LONGITUDINAL SECTION

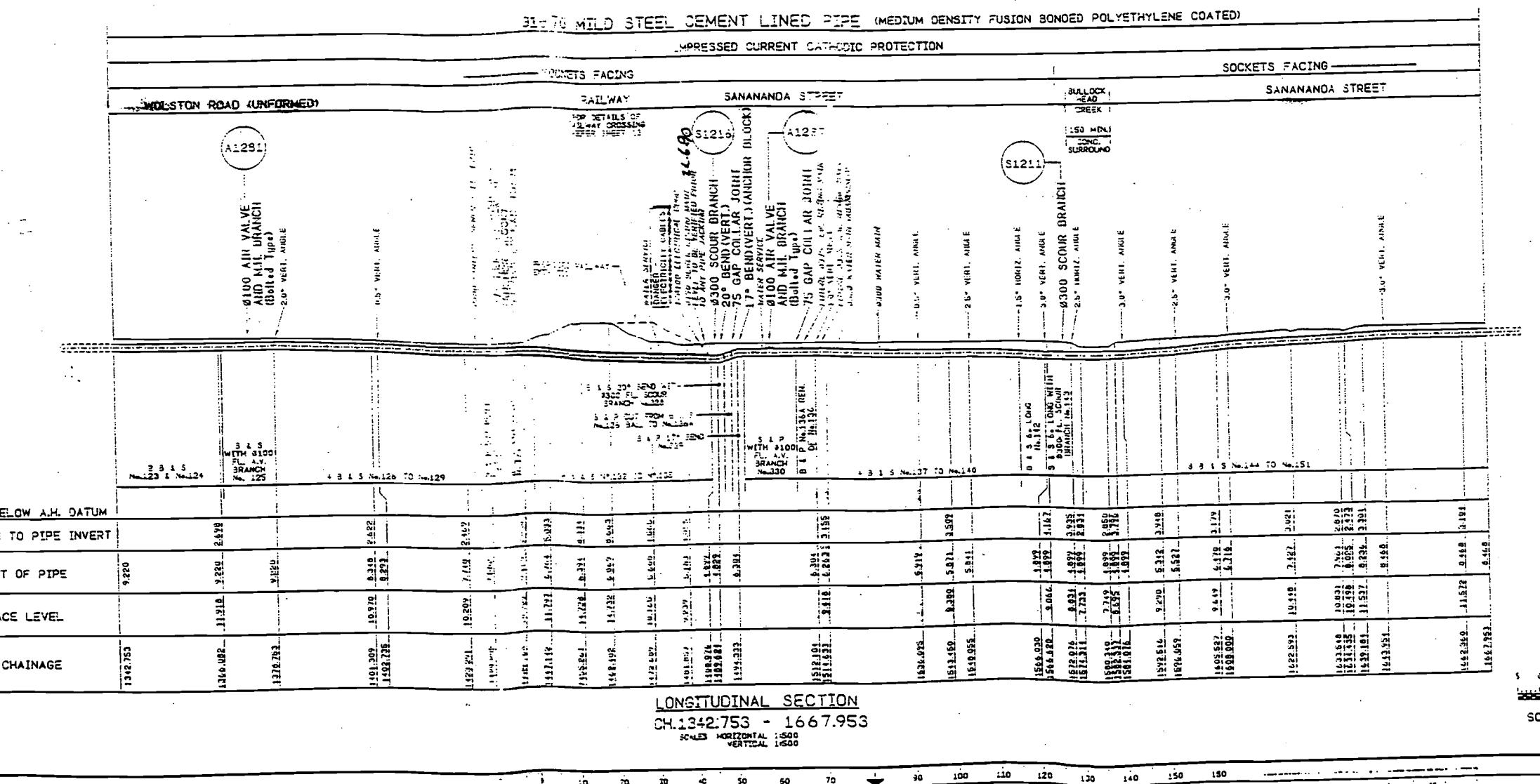
SCALE AS SHOWN INT 5 OF 20 SHEETS

DRAWING NO. 486/4/6-W7085P AMEND. 0

NOTES

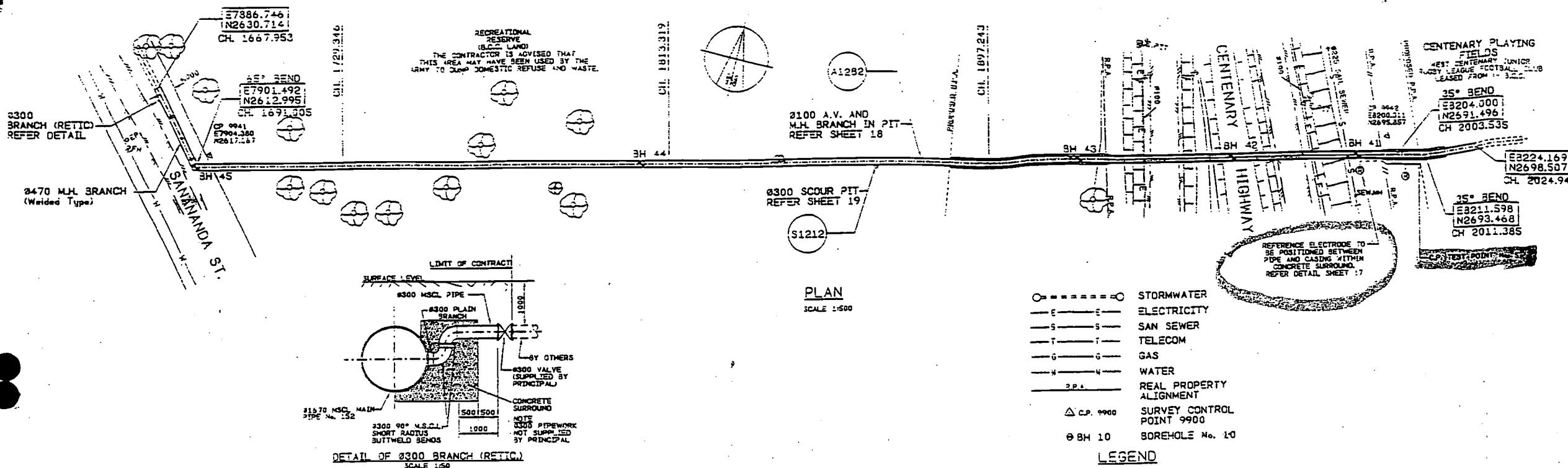


LEGEND



NOTES

- G1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH OTHER CONTRACT DOCUMENTATION AND DRAWINGS.
- G2. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS FOR THE CONTRACT AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.
- G3. THE CONTRACTOR SHALL VERIFY DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION. DRAWINGS SHALL NOT BE USED AS A SUBSTITUTE FOR MEASUREMENTS.
- G4. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
- G5. NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
- G6. THE CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
- G7. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.
- G8. FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.
- G9. MANHOLE COVERS AND SPINDELE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MANHOLE COVERS SHALL BE SUPPLIED BY THE PRINCIPAL.
- P1. INSULATED BOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLANGED BRANCHES INCLUDING RETICULATION CONNECTIONS, SCOURS AND AIR VALVES.
- P2. UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.
- P3. EXTERNAL COATINGS ARE NOT TO BE REMOVED UNTIL THE COATINGS ARE SURROUNDED OR COVERED IN CONCRETE.
- P4. NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.
- P5. THE BOTH MECH AND ELEC SERVICES ARE TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.
- Trees: NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.



01670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

IMPRINTED CURRENT CATHODIC PROTECTION

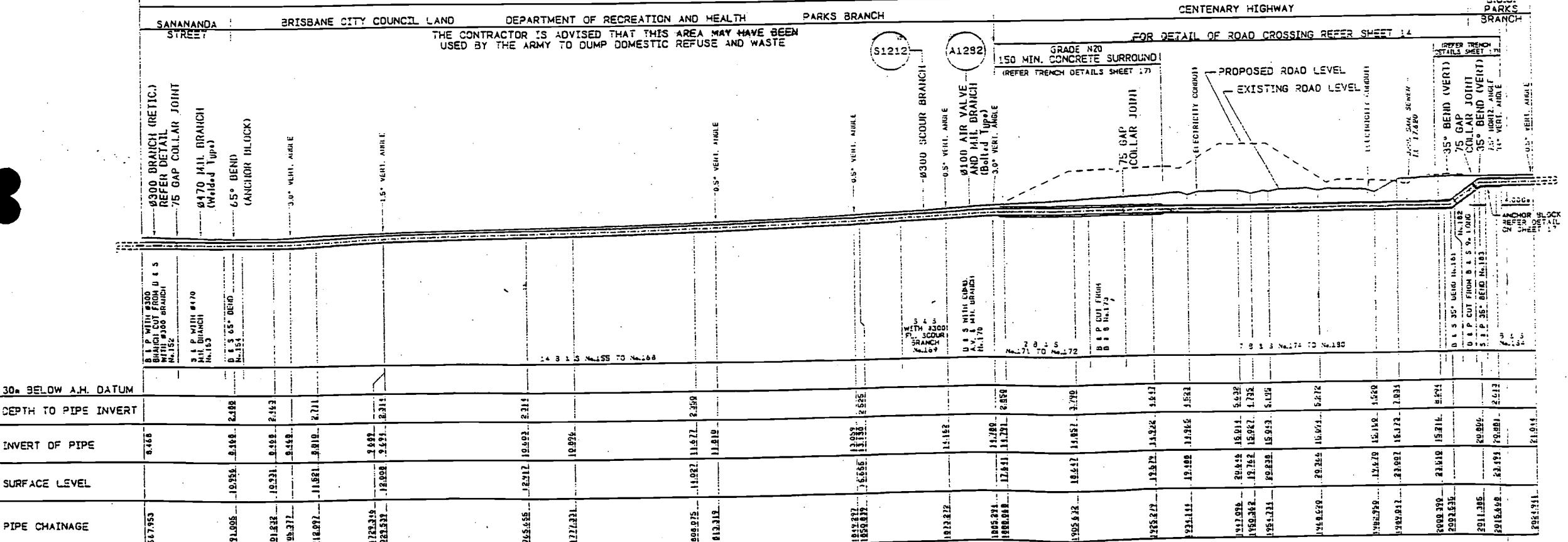
SOCKETS FACING

CENTENARY HIGHWAY

B.C.C.

PARKS

BRANCH



LONGITUDINAL SECTION
CH. 1667.953 - 2024.941
SCALE HORIZONTAL 1:500
VERTICAL 1:500

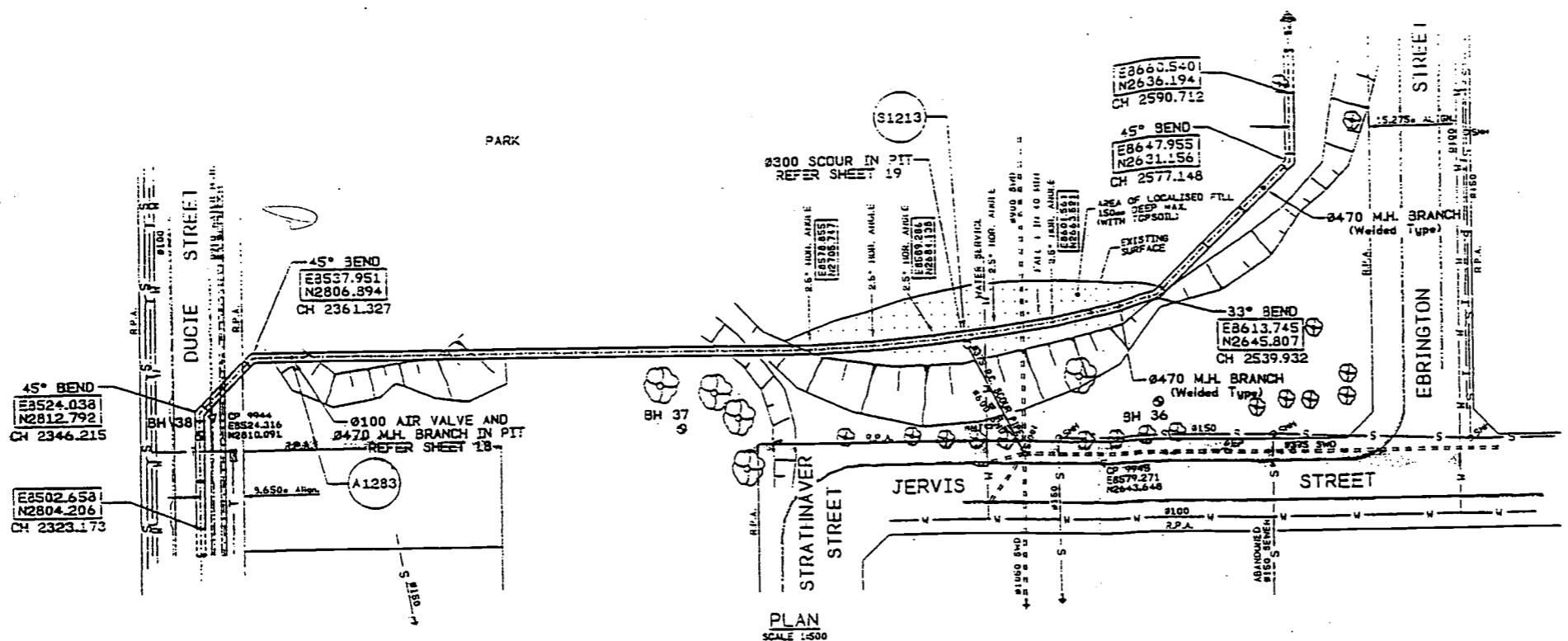
S 0 S 10 S 15 S 20
1667.953 1668.000 1668.050 1668.100 1668.150 1668.200 1668.250 1668.300 1668.350 1668.400 1668.450 1668.500 1668.550 1668.600 1668.650 1668.700 1668.750 1668.800 1668.850 1668.900 1668.950 1669.000 1669.050 1669.100 1669.150 1669.200 1669.250 1669.300 1669.350 1669.400 1669.450 1669.500 1669.550 1669.600 1669.650 1669.700 1669.750 1669.800 1669.850 1669.900 1669.950 1670.000

1667.953 1668.000 1668.050 1668.100 1668.150 1668.200 1668.250 1668.300 1668.350 1668.400 1668.450 1668.500 1668.550 1668.600 1668.650 1668.700 1668.750 1668.800 1668.850 1668.900 1668.950 1669.000 1669.050 1669.100 1669.150 1669.200 1669.250 1669.300 1669.350 1669.400 1669.450 1669.500 1669.550 1669.600 1669.650 1669.700 1669.750 1669.800 1669.850 1669.900 1669.950 1670.000

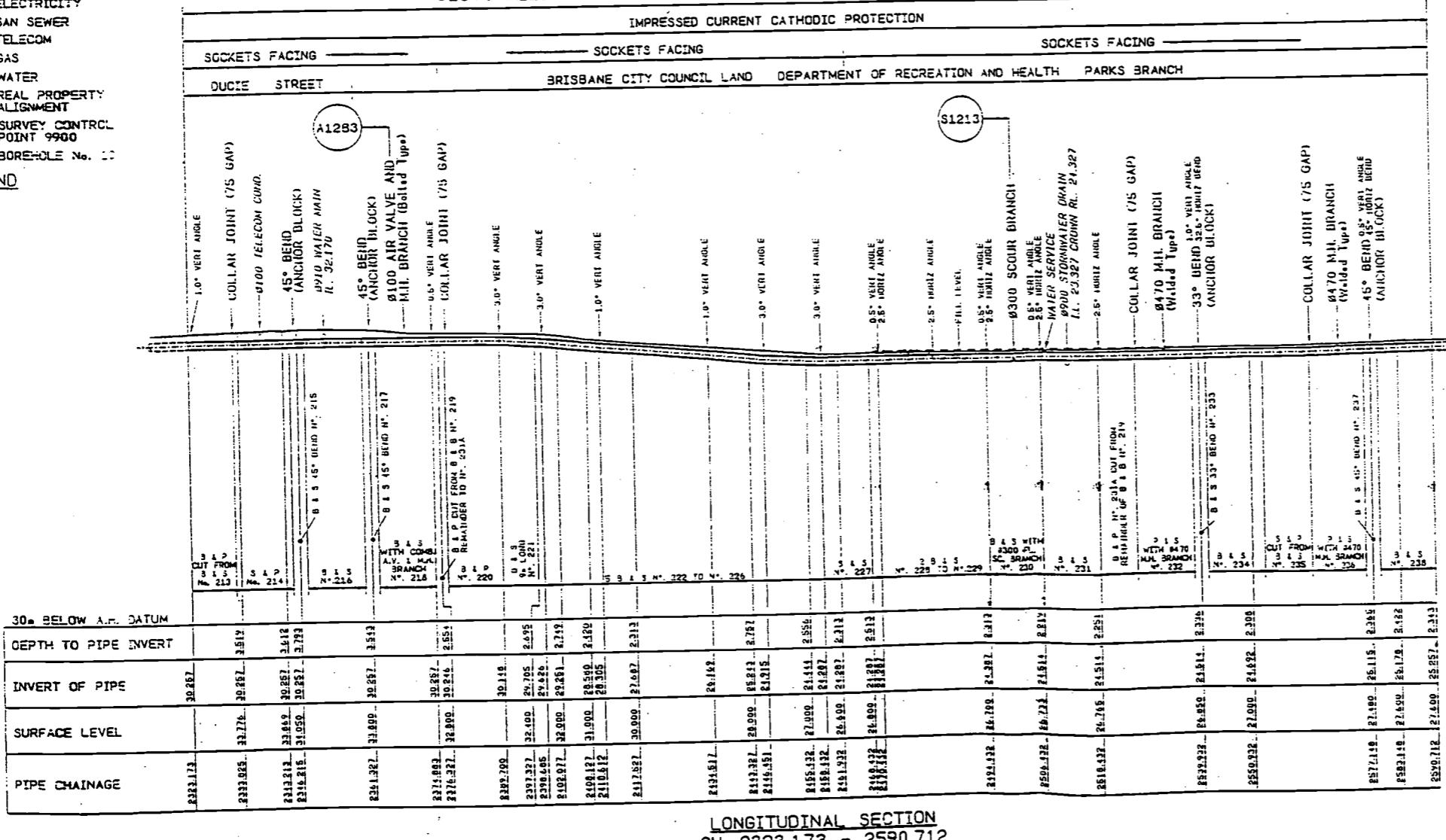
1667.953 1668.000 1668.050 1668.100 1668.150 1668.200 1668.250 1668.300 1668.350 1668.400 1668.450 1668.500 1668.550 1668.600 1668.650 1668.700 1668.750 1668.800 1668.850 1668.900 1668.950 1669.000 1669.050 1669.100 1669.150 1669.200 1669.250 1669.300 1669.350 1669.400 1669.450 1669.500 1669.550 1669.600 1669.650 1669.700 1669.750 1669.800 1669.850 1669.900 1669.950 1670.000

SCALE OF METRES
1:500

MAIN CONSTRUCTION DETAILS	DATE COMMENCED	DATE COMPLETED
	SIGNATURE	DATE
APPROVE AMENDMENT/ISSUE TO/SAME FOR INITIALS		
AMENDMENT & ISSUE REGISTER		
MANAGER	DIRECTOR OF PLANNING DESIGN	
DATE	DATE	
DIRECTOR OF CONSTRUCTION	DIRECTOR OF SEWAGE OPERATOR/SWS DISTRIBUTION	
DATE	DATE	
DESIGN: 3.1.6 OCT 14 ENGINEER: N. CHENG	ISSUE DATE: 20/10/2014	
DRAWN: 3.3.6 OCT 14 ENGINEER: N. CHENG	REVIEW DATE: 20/10/2014	
TRACED: 3.3.6 OCT 14 ENGINEER: N. CHENG	REVIEW DATE: 20/10/2014	
OKD: 3.3.6 OCT 14 FIELD CHECK	REVIEW DATE: 20/10/2014	
A.H. DATUM	SURVEYED: R. BOYALL	
CAD FILE NO:	44W087	
JOB FILE NO:	47705/S268	
BRISBANE CITY COUNCIL		
DEPARTMENT OF WATER SUPPLY & SEWERAGE		
PLANNING & DESIGN BRANCH		
PROJECT: MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION		
TITLE: WACOL TO OXLEY SECTION 1 1670 DIA MSCL WATER MAIN PLAN AND LONGITUDINAL SECTION		
SCALE AS SHOWN IN 7 OF 20 SHEETS		
DRAWING NO: 486/4/6-W7087P		
AMENDMENT 0		



C = = = = = O STORMWATER
 E = = = = = E ELECTRICITY
 S = = = = = S SAN SEWER
 T = = = = = T TELECOM
 G = = = = = G GAS
 W = = = = = V WATER
 P.P.A. REAL PROPERTY ALIGNMENT
 A.C.P. 9900 SURVEY CONTROL POINT 9900
 S.BH. 10 BOREHOLE No. 10
 LEGEND

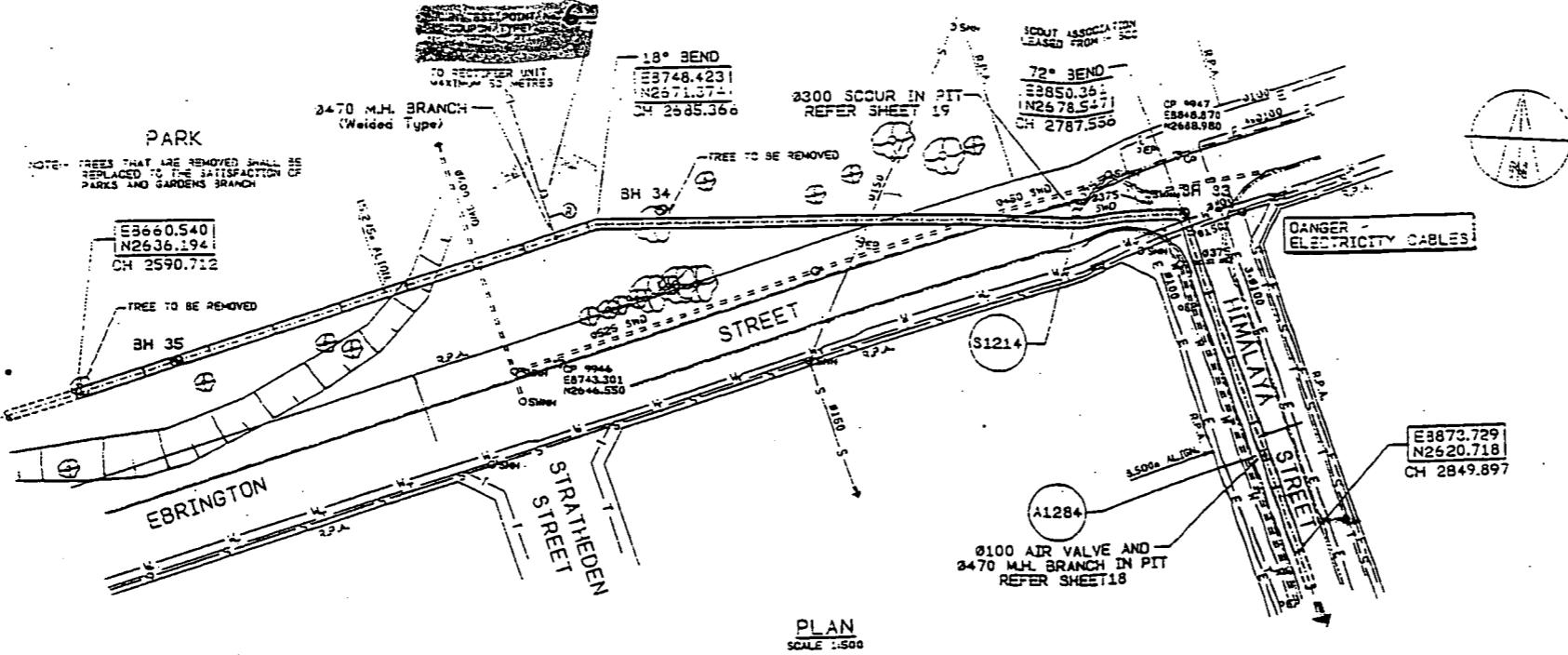


3 3 5 10 15 20 25

 SCALE OF METRES
 1:500

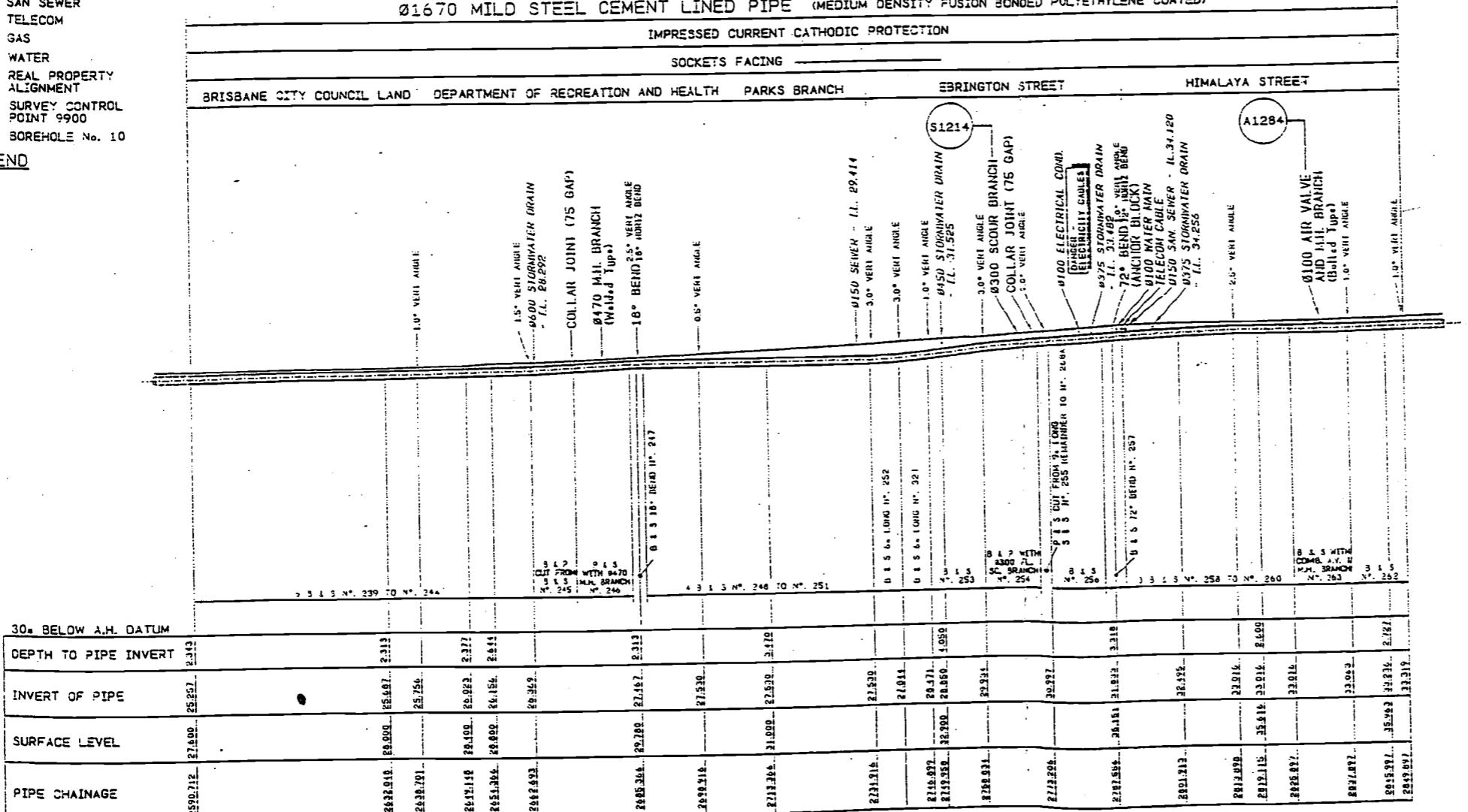
THIS DRAWING SHOWS THE DESIGN IN CONJUNCTION WITH OTHER CONSTRUCTION DOCUMENTATION AND DRAWINGS.		
THE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT STANDARDS AUSTRALIA, SPECIFICATIONS AND CODES AND PRACTICES OF THE RELEVANT BUILDING AUTHORITY.		
THE CONTRACTOR SHALL ENSURE ALL DIMENSIONS ON SITE PRICE DRAWINGS AND CONSTRUCTION DRAWINGS ARE IN METRES AND ARE SCALED.		
ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.		
NO SUBSTITUTE MATERIALS SHOULD BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.		
THE CONTRACTOR SHALL MAKE HIMSELF FULLY FAMILIAR WITH ALL EXISTING SERVICES AND STRUCTURES NEARBY AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.		
ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT REGULATIONS AND GUIDELINES.		
FOR DETAILS OF BOREHOLE LOSS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.		
MANHOLE COVERS AND SPINDLE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MANHOLE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL.		
POWER		
ISOLATED GOLT SETS AND GASKETS SHALL BE INSTALLED AND CENTERED FOR ELECTRICAL CONNECTIONS.		
FLANGE BRANCHES INCORPORATING RETICULATION CONNECTIONS, SCOURS AND AIR VALVES.		
UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.		
EXTERNAL COATINGS ARE NOT TO BE REMOVED WHEN PIPEWORK OR TRENCHES ARE SURROUNDED OR COVERED IN CONCRETE.		
NO REINFORCEMENT IS TO BE WELDED TO OR MADE CONTACT WITH THE FRAMEWORK.		
THE SOCSA MECH AND ELEC SERVICES BRANCH TO BE CONTACTED FOR BACKFILLING REQUIREMENTS.		
TEST POINTS ON OTHER FACILITIES ARE TO BE INSTALLED.		
BEEF NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.		
MAIN CONSTRUCTION DETAILS:		
DATE COMMENCED	DATE COMPLETED	SIGNATURE DATE
APPROVALS FOR AMENDMENTS/ISSUE NUMBER		
AMENDMENT & ISSUE REGISTER		
MANAGER	DIRECTOR OF PLANNING & DESIGN	DATE
DATE	DATE	DATE
DIRECTOR OF CONSTRUCTION	DIRECTOR OF M&E SERVICES	DIRECTOR OF SEWAGE OPERATIONS/ASSET DISTRIBUTION
DATE	DATE	DATE
DESIGN : Q.B. OCT '94	ENGINEER IN CHARGE : <i>CHADWICK</i> <i>10/10/94</i>	DATE
SPRINKLER : 12/10/94	SUPERVISING ENGINEER : <i>LEONARD</i> <i>10/10/94</i>	DATE
TRACED :	SURVEY NO. : 3095	DATE
OK'D : M.S.L NOV '94	FILED : 1974/6	DATE
A.H. DATUM :	SURVEYED : R. BOXALL	DATE
CADD FILE NO. :	46W7089	DATE
JOB FILE NO. :	(71705/5(253))	DATE
BOOMBEAN CITY COUNCIL DEPARTMENT OF WATER SUPPLY & SEWERAGE PLANNING & DESIGN BRANCH		
PROJECT : MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION		
TITLE : WACOL TO OXLEY SECTION 1 1670 DIA. MSCL WATER MAIN PLAN AND LONGITUDINAL SECTION		
SCALE AS SHOWN	1 OF 20 SHEETS	AMEND.
DRAWING NO.	486/4/6-W7089P	0

Cathodic Protection System - Wacol to Oxley - Trunk Water Main - Section 1 - OM Manual



○ STORMWATER
 — E — ELECTRICITY
 — S — SAN SEWER
 — T — TELECOM
 — G — GAS
 — W — WATER
 ■ P.A.
 △ CP. 9900 SURVEY CONTROL POINT 9900
 ● BH 10 BOREHOLE No. 10

LEGEND



30m BELOW A.H. DATUM

DEPTH TO PIPE INVERT	2.312
INVERT OF PIPE	25.756
SURFACE LEVEL	25.696
PIPE CHAINAGE	2590.712

LONGITUDINAL SECTION
CH. 2590.712 - 2849.897
SCALES HORIZONTAL 1:500
VERTICAL 1:500

5 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

5 0 5 10 15 20 25 30
SCALE OF METRES
1:500

MASTER
DRAWING NO. 486/4/6-W7090P
AMENDMENT NO. 0
SCALE AS SHOWN IN 10 OF 20 SHEETS

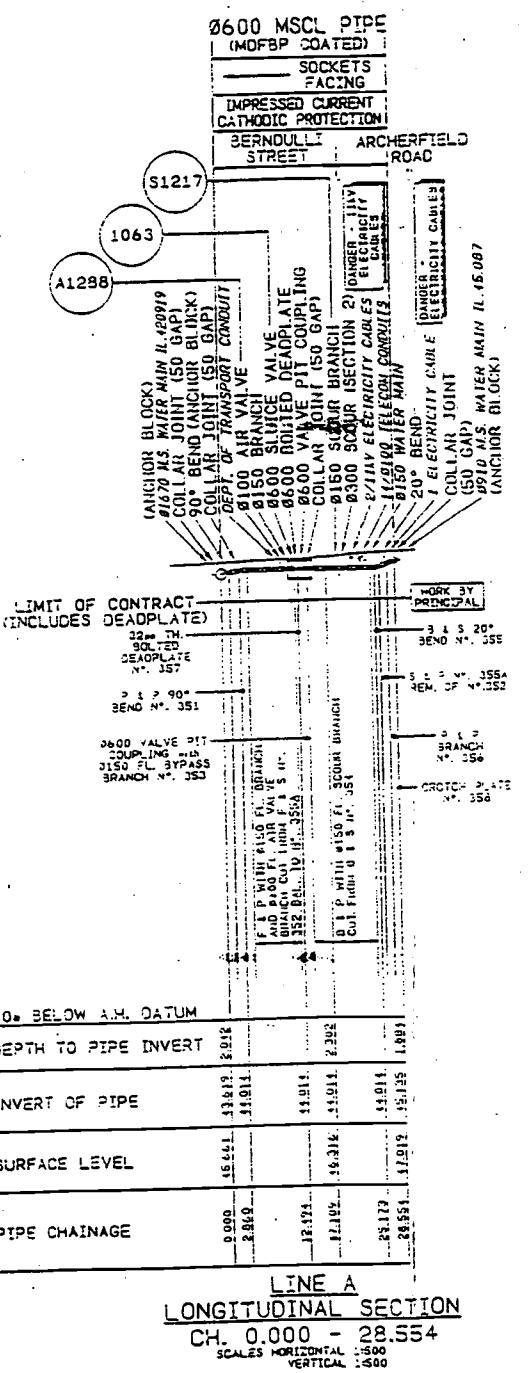
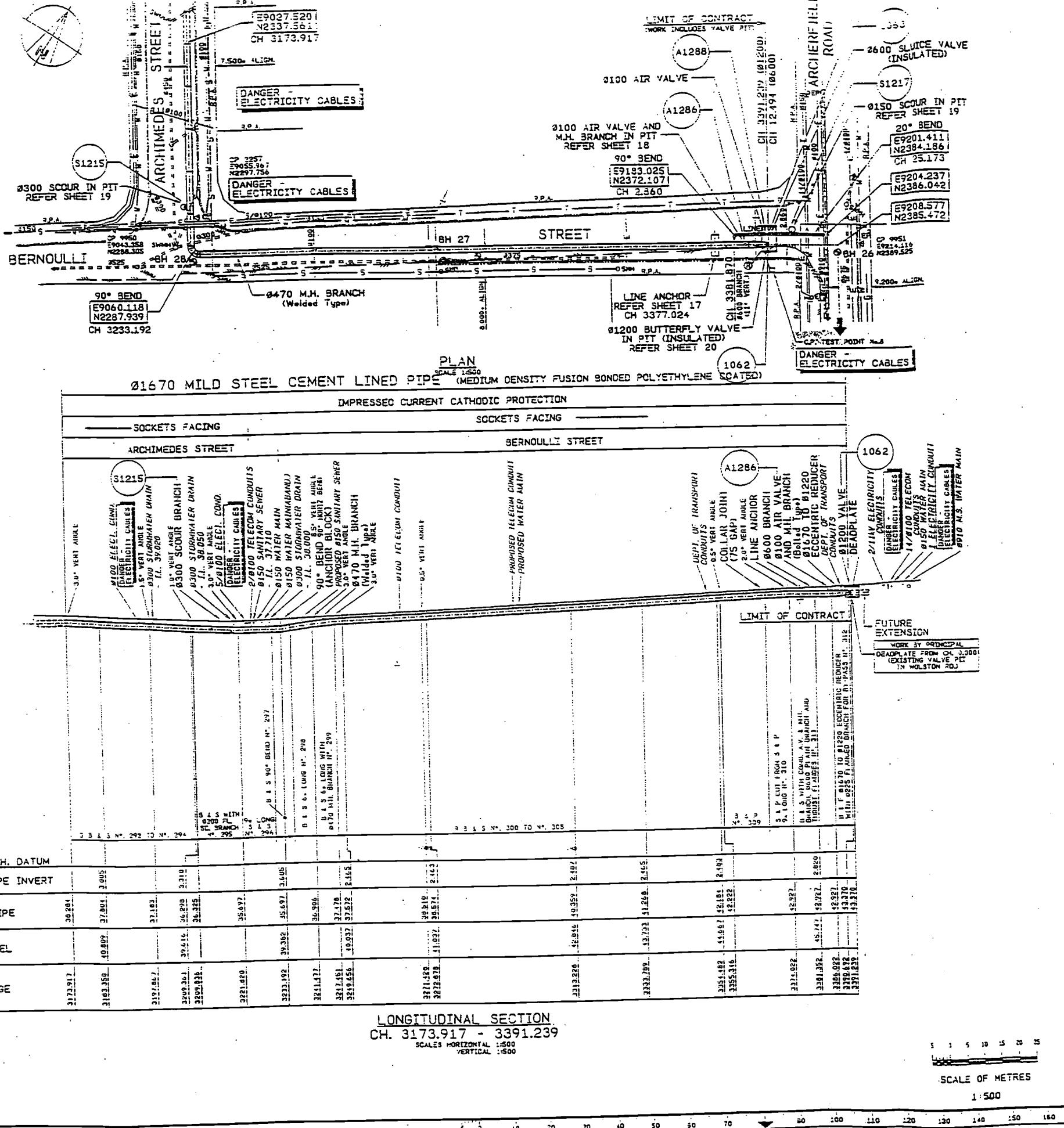
BRISBANE CITY COUNCIL
DEPARTMENT OF WATER SUPPLY & SEWERAGE PLANNING & DESIGN BRANCH

PROJECT: MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION
TITLE: WACOL TO OXLEY SECTION 1 1670 DIA. MSCL WATER MAIN PLAN AND LONGITUDINAL SECTION

MAIN CONSTRUCTION DETAILS
DATE COMMENCED DATE COMPLETED
SIGNATURE DATE

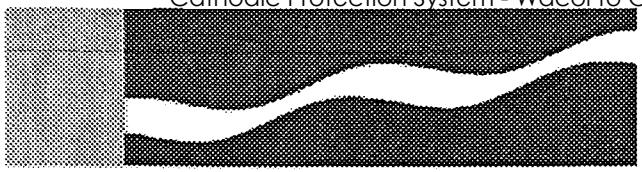
NOTICE AMENDMENT/ASSESS TO ISSUE FOR INITIALS
AMENDMENT & ISSUE REGISTER
MANAGER DIRECTOR OF PLANNING & DESIGN
DATE
DIRECTOR OF CONSTRUCTION DATE
DIRECTOR OF SERVICES DATE
DIRECTOR OF OPERATIONS DATE
DIRECTOR OF DISTRIBUTION DATE
DATE DATE
DESIGN 10.3 OCT 1994 ENGINEER IN CHARGE
DRAWN 10.3 NOV 1994 SUPERVISOR ENGINEER
TRADED 10 SURVEY 10.95
CHECKED 10.95 FIELD BOOK 1994/6
AH. DATUM SURVEYED 1.500 ALL
DATA FILE NO. 46W7090
JOB FILE NO. 17105/S(288)

GENERAL
G1 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH OTHER CONTRACT DOCUMENTATION AND DRAWINGS.
G2 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE APPROPRIATE AUSTRALIAN SPECIFICATIONS STANDARDS AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.
G3 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION. DRAWINGS SHALL NOT BE SCALLED.
G4 ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
G5 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
G6 THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE WORK AREA. HE WILL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
G7 ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.
G8 FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.
G9 MANHOLE COVERS AND SPINDLE BOXES FOR ALL VALVE PITS, BOREHOLE PITS, AIR VALVE PITS AND MANHOLE PITS SHALL BE SUPPLIED BY THE PRINCIPAL BOREHOLE CONTRACTOR.
P1 INSULATED SOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLANGED SHAFTS, VALVE REGULATOR CONNECTIONS, SCOURS AND AIR TRAVELS.
P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.
P3 EXTERNAL CRAFTINGS ARE NOT TO BE REINFORCED WHEN PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.
P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.
P5 THE B.C.C. MECH. AND ELEC. SERVICES BRANCH TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.
TREES
T1 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.



MASTER

ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE OPERATOR'S STANDARDS AND BY LAW AND REGULATIONS OF THE RELEVANT BUILDING AUTHORITY.		
THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION. DRAWINGS SHALL NOT BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.		
ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.		
NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.		
THE CONTRACTOR SHALL MAKE HIMSELF FULLY FAMILIAR WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.		
ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.		
FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.		
MANHOLE COVERS AND SPINDLE BOXES FOR ALL VALVE SITES, SOIL PITS, AIR VALVE PITS, ETC., MANHOLE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL.		
PIPework		
P1 INSULATED BOLT SETS AND JASSETKS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLAMED BRANCHES INCLUDING RETICULATION CONNECTIONS, SCOUR AND AIR VALVES.		
P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.		
P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED WHEN PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.		
P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.		
P5 THE BCC's MECH. AND ELEC. SERVICES BRANCH SHALL BE CONTACTED PRIOR TO SACRIFICIAL AREAS WHERE CATHODIC PROTECTION TEST POINTS ON OTHER FACILITIES ARE TO BE INSTALLED.		
Trees		
T1 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.		
MAIN CONSTRUCTION DETAILS		
DATE COMMENCED	DATE COMPLETED	
SIGNATURE	DATE	
NOTICE AMENDMENT, ISSUE TO SITE FOR INITIALS		
AMENDMENT & ISSUE REGISTER		
MANAGER	DIRECTOR OF PLANNING & DESIGN	
DATE	DATE	
DIRECTOR OF CONSTRUCTION	DIRECTOR OF M&E SERVICES	DIRECTOR OF SEW. OPERATIONS/WATER DISTRIBUTION
DATE	DATE	DATE
DESIGN	ENGINEER IN CHARGE	
DRAWN	DESIGNER	
TRACED	NO.	SURVEY NO.
OK'D	MUL. OCT '94	FIELD BOOK
A.H. DATUM		7074/6
DATA FILE NO.	7074/6-BOXALL	
JOB FILE NO.	(7)705/5(288)	
 BRISBANE CITY COUNCIL DEPARTMENT OF WATER SUPPLY & SEWERAGE PLANNING & DESIGN BRANCH		
PROJECT		
MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION		
TITLE		
WACOL TO OXLEY SECTION 1 1570 DIA. MSCL WATER MAIN PLAN AND LONGITUDINAL SECTION		
SCALE AS SHOWN INT 12 OF 20 SHEETS		
DRAWING NO. 486/4/6-W7092P AMEND. 0		



Electrical Mechanical Water Meters
5 Bunya Street Eagle Farm Q 4009
Ph. (07) 3403 1849
Fx. (07) 3403 1898

20 September 1996

Brisbane Water Engineering Services

OPERATING MANUAL FOR:

WACOL TO OXLEY

TRUNK MAINS

Section 1

CATHODIC PROTECTION SYSTEM

CLIENT:

BRISBANE WATER.
WATER MAINTENANCE SECTION.

- (1.0) Introduction
- (2.0) Corrosion and Cathodic Protection
- (3.0) Mains Details
- (4.0) Cathodic Protection
- (4.1) Type of System
- (4.2) Rectifier
- (4.3) Cathode
- (4.4) Anodes
- (4.5) Test Points
- (4.6) Associated Drawings
- (4.7) Associated Standards
- (4.8) Government Regulations
- (5.0) Performed Testing
- (6.0) Conclusion
- (7.0) Maintenance

DRAWINGS

486/6/25-AA1C0021E

Standard Rectifier Wiring Diagram

(No Number)

Monthly Maintenance Program

486/4/6-W7080GD TO

Logan City Trunk Main Amplification

486/4/6-W7101RC

-(1.0) INTRODUCTION

Steel when immersed or covered in water has a tendency to corrode (or rust) as the oxidized form is more stable than the metal.

Because of this, precaution must be taken to stop or minimize the corrosion reaction to an acceptable level consistent with the design life of the structure. This is normally achieved by the use of protective coatings which control the corrosion reaction by isolating the steel from its surrounding environment.

However, it is not practical to achieve a perfect coating and coating damage will always occur with time. Because of this, corrosion may occur at imperfections in the paint coating, causing further deterioration in the coating as well as loss of metal.

As a result of this, the coating defects must be rectified by periodic maintenance or an additional method of protection used to prevent this deterioration and corrosion occurring. This additional protection is achieved by the cathodic protection system.

(2.0) CORROSION AND CATHODIC PROTECTION

Corrosion is an electrochemical process in that it is accompanied by a flow of electrical current.

Corrosion occurs on the surface of metals at active areas known as anodes, which are electrically continuous with less active or passive areas known as cathodes. The electric current flows from the anode through the electrolyte to the cathode, with the circuit being completed by the electrical continuity between the cathode and anode. In practice anodes and cathodes are generally part of the same metallic surface and individual anodic areas may be small.

In applying cathodic protection an external current is applied to the surface so that the entire surface to be protected acts as a cathode. This involves the use of an auxiliary anode and when the current flow from this anode is sufficient, no part of the structure acts as an anode.

An external source of direct current such as a transformer rectifier is used in conjunction with an anode consisting of material with a very slow corrosion rate.

While it is the flow of current which achieves the cathodic protection of the surface it is impractical to measure these currents over individual anodic areas to determine when cathodic protection has been achieved. However, with the flow of cathodic protection current, the structure becomes more negative with respect to the surrounding electrolyte. Because of this, it is possible to state values of metal/electrolyte potential at which corrosion does not occur. This metal/electrolyte potential is generally measured against a standard reference electrode which allows a reproducible potential at which corrosion does not occur to be quoted.

(3.0) MAINS DETAILS

Size: Existing 600 and new 1670 Dia mild steel cement lined.

Note The new main is protected in parallel with Ducie st system and is controlled from the rectifier in Ducie st.

Coating: Tar Epoxy. /Fusion bonded polyethelene

Length: Appox 3.28 Km.

Location: Wacol Station rd to Bernoulli st Valve (A1277) 300M along Wolston rd (unformed)to (Valve A1292). Bernoulli st 10M from Archerfield rd

Construction.

Drawings:

486/4/6-W7080GD

486/4/6-W7101RC

DUCIE St. C.P. System

- (4.1) Type of Cathodic Protection: Impressed Current.
- (4.2) Rectifier: Standard 25 Volt, 25 amp direct current output enclosed in a stainless steel switchboard. Rectifier has a 240V supply from Ducie st Electricity pole . The rectifier is located in Ducie st. In the park.
- (4.3) Cathode: The cathode point is located on the 600 Dia mains, 2M in front of the rectifier and on the 1670 Dia mains directly to the rear of the rectifier across the park next to Ebrington st. The cathode point is where the cabling from the rectifier is attached to the structure under cathodic protection.
- (4.4) Anodes: Two 1500 x 75mm silicone iron anodes were installed approximately 200 metres from the rectifier in the center of the park in a vertical bed. The anodes were firstly packaged with cokebreeze thereby improving anode – ground resistance. The anodes are identified by a marker label fixed to the distribution pit lid.
- (4.5) Test Points: Test points are installed on cathodically protected structures to enable testing to ensure full protection of the mains. On these mains eight test points have been installed and their locations can be identified from the layout drawing.
- (4.6) Associated Drawings:
Cathodic Protection Details – 2/14.213
Cathodic Protection Test Point Details – 2/14.199
Standard Rectifier Wiring Diagram – 486/6/25-AA1C0021E
Standard Vertical Groundbed Details – 486/6/25-AA1C0024E
- (4.7) Associated Standards:
AS 3000 1986 Australia Wiring Rules
AS 2832.1 1985 Pipes, Cables, Ducts, Guide to Cathodic Protection, Part One.
- (4.8) Government Regulations:
Queensland Electricity Acts and Regulations.

- (1) Natural Potential Survey.
- (2) Testing of Insulated Flanges, Joints.
- (3) Soil Resistance Testing.
- (4) Current Drain Survey.
- (5) Pipe Coating Anomaly Survey.
- (6) Rectifier Loop Resistance.
- (7) Foreign Structure Interference Survey and Mitigation.
- (8) Final Potential Survey and Commissioning.

(6.0) CONCLUSION

Full Cathodic protection has been achieved on this section of trunk mains. The cathodic protection system is registered with the Queensland Electricity Commission and has approval to operate.

(7.0) MAINTENANCE

The cathodic protection system is maintained on a monthly basis after commissioning. These checks involve testing rectifier operation and recording of pipe to soil potentials.

CPS Monthly Maintenance Details.

Required:

- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.

Labour:

One tradesperson, one vehicle. 20 minutes per site.

Procedure:

- 1/ Identify installation.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Comments.
- 6/ Log entry.

CPS 6 Monthly Maintenance Details.

Required:

- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.
- 3/ Set of tools. (Electricians)
- 4/ Multimeter.
- 5/ DC clampmeter.
- 6/ Copper sulphate reference cell and leads.
- 7/ Cleaning equipment.
- 8/ Gatic cover lifters.

Labour:

One tradesperson electrical, one laborer, one vehicle.
Two hours per site.

Procedure:

- 1/ Identify system.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Record "on" potentials for all test points.
- 6/ Record "instant off" potentials for all test points.
- 7/ Record "off" potentials for all test points.
- 8/ Perform loop resistance and record.
- 9/ Check and record anode string currents.
- 10/ Comments.
- 11/ Log entry.

CPS 60 Monthly Maintenance Details.

Required:

- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.
- 3/ Set of tools. (Electricians)
- 4/ Multimeter.
- 5/ DC clampmeter.
- 6/ Copper sulphate reference cell and leads.
- 7/ Cleaning equipment.
- 8/ Gatic cover lifters.
- 9/ Rectifier load bank.
- 10/ PCS2000 Detection Equipment.

Labour:

One tradesperson electrical, one laborer, one vehicle.
Eight hours per site.

Procedure:

- 1/ Identify system.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Record "on" potentials for all test points.
- 6/ Record "instant off" potentials for all test points.
- 7/ Record "off" potentials for all test points.
- 8/ Perform loop resistance and record.
- 9/ Check and record anode string currents.
- 10/ Load test rectifier for 10 minutes.
- 11/ Check all switchboard and testpoint terminals for tightness.
- 12/ Check all switchboard and testpoints are labelled and I.D. tags attached.
- 13/ Check plans are correctly drawn and modify if necessary.
- 14/ Remove and inspect anodes.
- 15/ Recheck all interference (CPS) bleeds.
- 16/ Pipecamp structure if applicable.
- 17/ Apply for "continue to operate" permit if applicable.

Brisbane Water Engineering Services

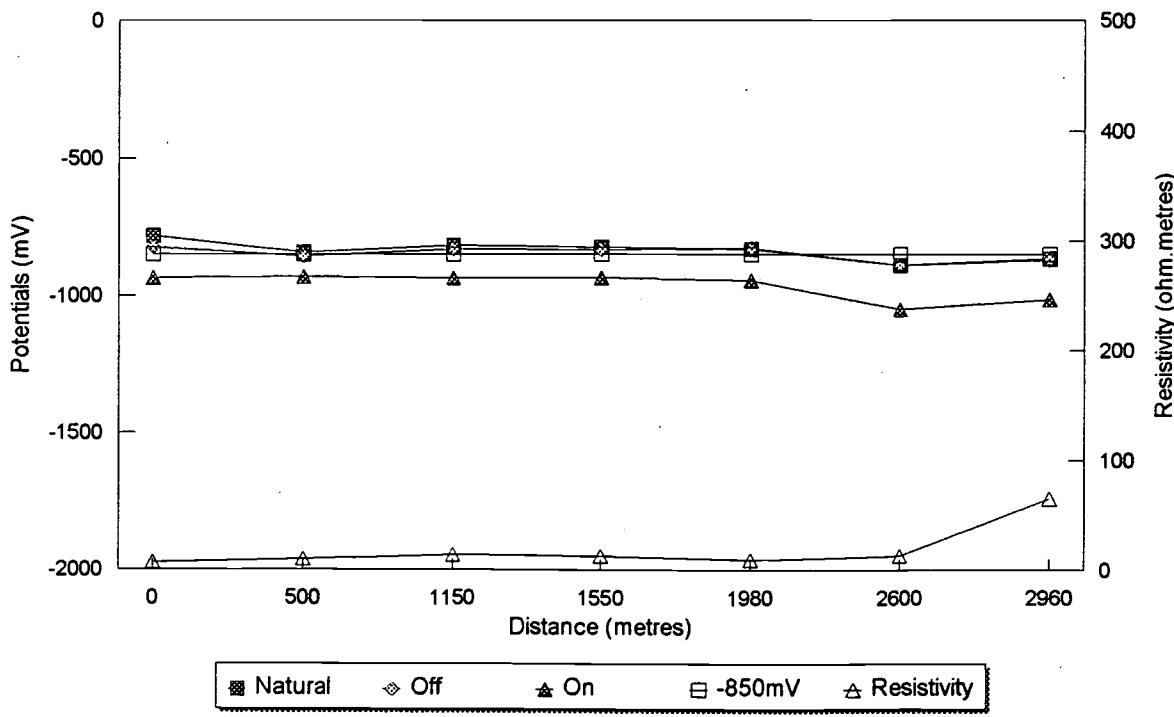
CP Form No. 23

Electrical Engineering Unit**Cathodic Protection System Potential Recording Form**

Project _____

Date _____

Test Point number	Distances to T.P. (metres)	Potentials to CuSO ₄			Resistivities at 2 metres (ohm.metres)
		Natural (mV)	Off (mV)	On (mV)	
1	0	-783	-824	-936	6.5
2	500	-842	-857	-931	9.98
3	1150	-818	-831	-936	13.91
4	1550	-823	-833	-936	12.61
5	1980	-832	-828	-946	9.1
6	2600	-889	-890	-1049	13
7	2960	-866	-870	-1014	65
8	3280	-888	-891	-1004	52
9					
10					
11					
12					
13					
14					

Graph of potentials and resistivity vs pipelength

Brisbane Water Engineering Services**Electrical Engineering Unit**

Ph. 34031838 Fx. 34031839

5 Bunya Street

Eagle Farm Q 4009

Cathodic Protection System Loop Resistance

Date: 20 September 1996

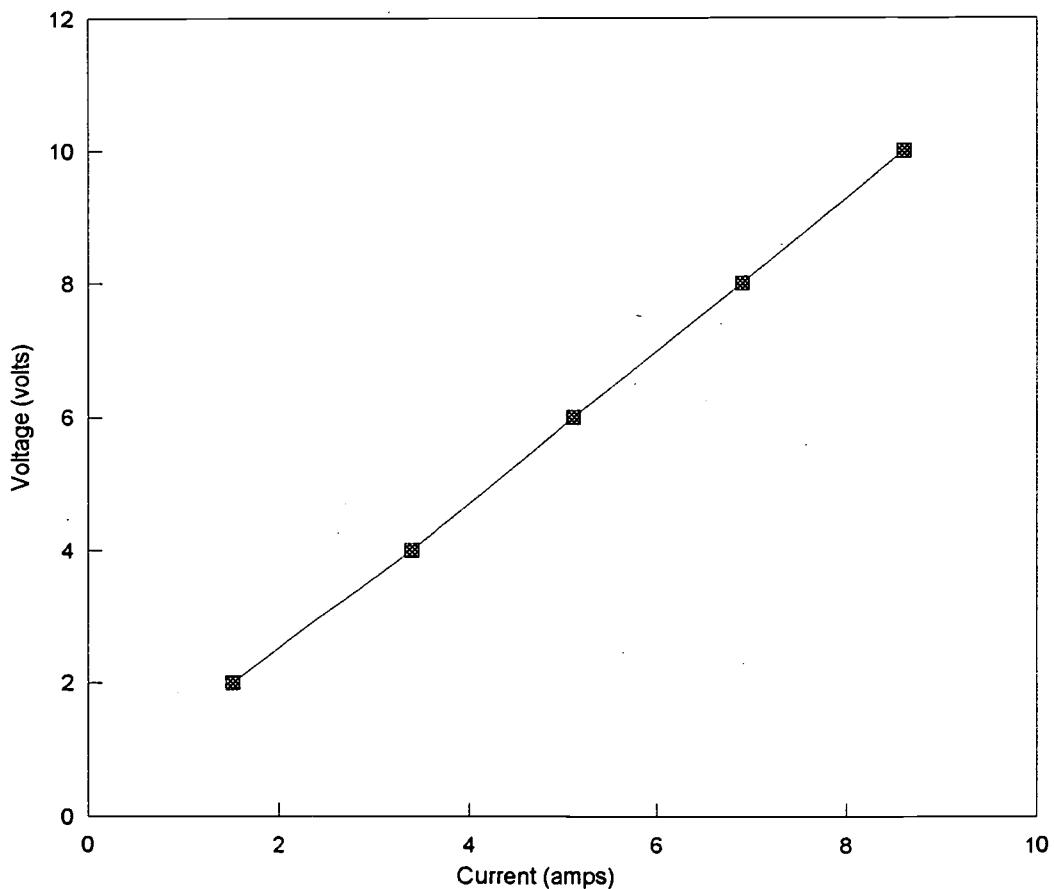
Cathodic Protection System: Wacol to Oxley section 1

System Operating Volts: 7.9 System Operating amps

6

Test Voltage: (volts)	Test Current: (amps)
2	1.5
4	3.4
6	5.1
8	6.9
10	8.6

Loop Resistance (ohms)
1.142857

Graph of System voltage vs current.

Brisbane Water Engineering Services

CP Form No.26

Electrical Engineering Unit**Cathodic Protection System General Information Form**Project Wacol to Oxley Sect. 1Date 30-7-96LOCATION OF RECTIFIERSHARED with 600 TM.

NUMBER & STREET NAME:

Ducie St Park opp Stratheden

SUBURB:

Darra 197 R 16

POSTCODE:

4076

UBD MAP REFERENCE:

197 R 16SYSTEM INFORMATION:

INSTALLATION PROTECTED:

1670

DIAMETER of MAIN in mm:

4,000

LENGTH of MAIN in metres:

Medium Density Fusion bond Polyethylene

COATING on MAIN:

Fresh Water

PRODUCT CARRIED:

1996

YEAR MAIN INSTALLED:

From Wacol Wacol stn Rd
Wacol 197 E 15

INSTALLATION EXTREMITIES:

To Bernoulie St Archerfield Rd.
198 B 19

CPS NUMBER:

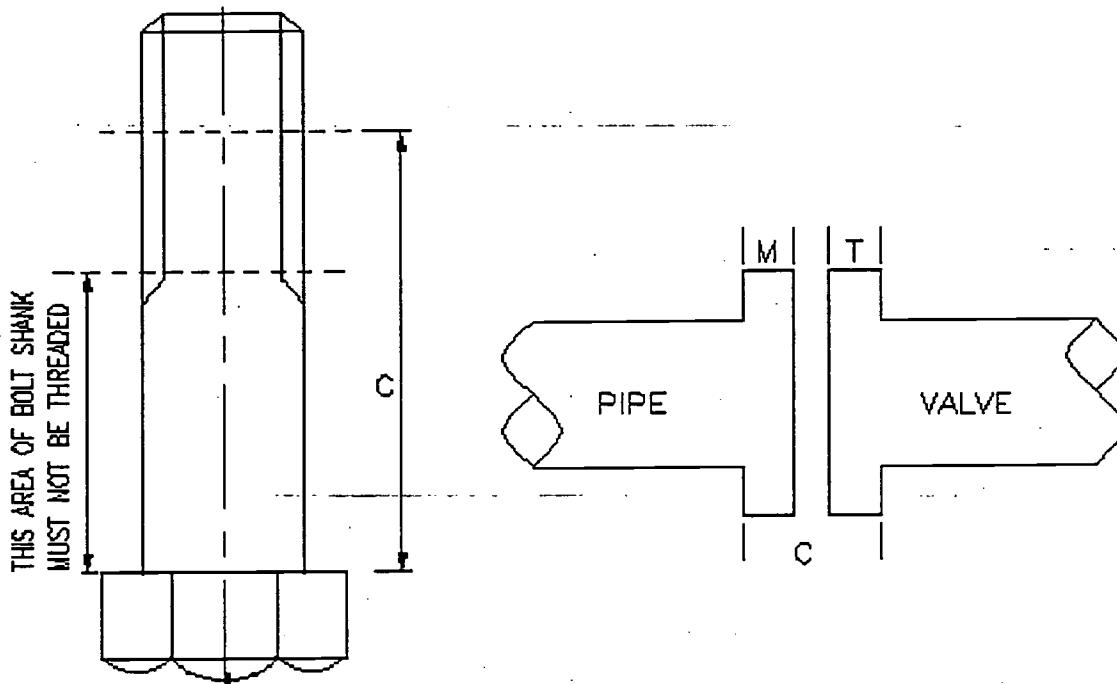
DATE C.P. COMMISSIONED:

DRAWING NUMBER:

H.V. LINE CROSSINGS:

FOREIGN STRUCTURES in AREA:

GasH.V. 110 KV SEQEB LineTelecomCOMPILED BY

Electrical Engineering Unit**Insulated Bolt Details Form**Project Wacol to OxleyValve No. TP 8 1670 Pipe 1286Date 30-7-96

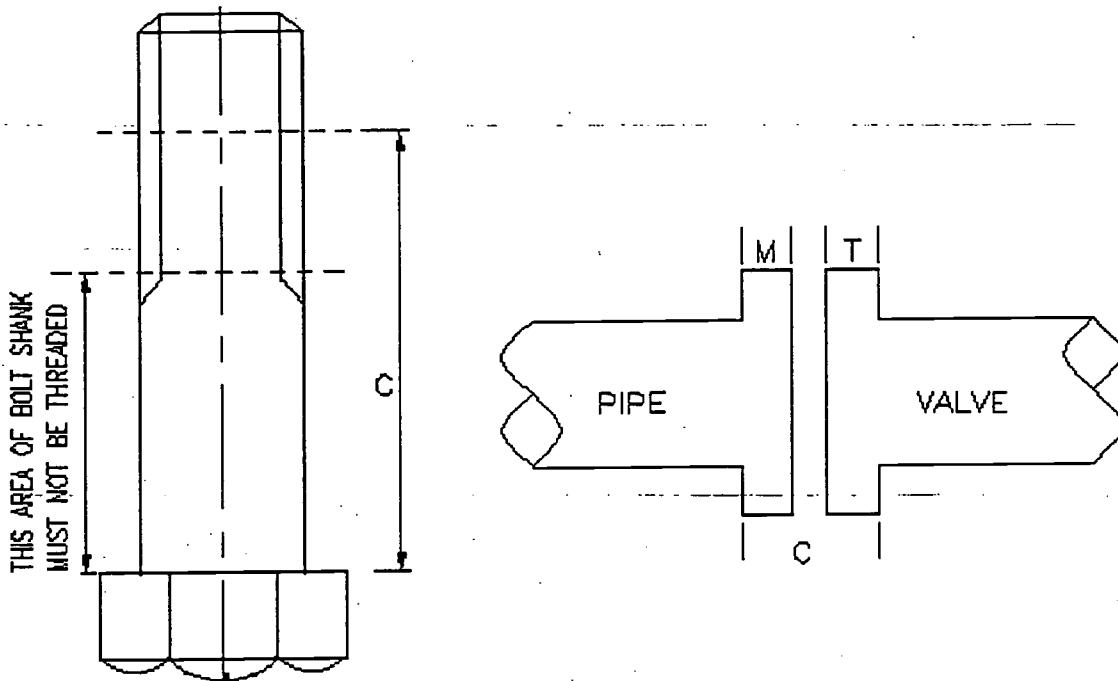
M	50
T	50
C	3
Diameter of Bolt	32
Diameter of Flange Hole	35
No. of Bolts per Flange	32
Total No. Bolts	64
Total No. Mylar Washers	120

M = Thickness of Mild Steel Flange

T = Thickness of Valve Flange

C = Length of Sleeving or Coating

CHECKED BY J.T.

Electrical Engineering Unit**Insulated Bolt Details Form**Project Wacol to OxleyValve No. TP 1. A 1277Date 30 - 7 - 96

M	<u>50 mm</u>
T	<u>50 mm</u>
C	<u>3 mm</u>
Diameter of Bolt	<u>32 mm</u>
Diameter of Flange Hole	<u>35 mm</u>
No. of Bolts per Flange	<u>32 mm</u>
Total No. Bolts	<u>64.</u>
Total No. Mylar Washers	<u>120</u>

M = Thickness of Mild Steel Flange

T = Thickness of Valve Flange

C = Length of Sleeving or Coating

CHECKED BY J. J.

Brisbane Water Engineering Services
Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1.

Unit Reading 7.9V 6A

Date 28-8-96

	Reading	Test Point I.D.	Location	Swing
On	-525	FH	14 Himalaya St	-14
Off	-511			
On	-514	Water Meter	opp 12. "	+7
Off	-521			
On	-532	MEN	" Pole 28203	-10
Off	-522			
On	-552	Fence 1	Seqeb Sub stn Himalaya. St	-9
Off	-543			
On	-567	Fence 2	" " "	-2
Off	-565			
On	-491	Water Meter	13 Himalay. St	+1
Off	-492			
On	-442	Fence	9/7 " "	+3
Off	-445			
On	-465	Fence	7 " "	-10
Off	-455			
On	-524	Fence	24 Eberington	-3
Off	-521			
On	-510	Water Meter	" "	-18
Off	-552			
On	-537	Water Meter	20 " "	-16
Off	-521			
On	-526	Water Meter	16 " "	+1
Off	-527			
On	-579	Water Meter	14 " "	-12
Off	-567			
On	-579	FH	" " "	+1
Off	-580			
On				
Off				

TESTED BY J. S.

Brisbane Water Engineering Services

Cathodic Protection System - Wacol to Oxley - Trunk Water Main - Section 1 - OM Manual

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project: Wacol to Oxley Sect.1

Unit Reading 7.9 Volts 6 Amp Date 28-8-96

	Reading	Test Point I.D.	Location	Swing
On	-283	Retic Valve	cnr Stratheden Ebrington	+6
Off	-289		" "	00
On	-107	Water Meter	" "	00
Off	-107		cnr Stratheden Ipswich	00
On	-474	Water Meter	" "	-1
Off	-474		Pole 37581	+1
On	-424	FH	" "	-1
Off	-423		" "	+1
On	-626	MEN	" "	-3
Off	-627		9 Stratheden	+5
On	-222	Retic Valve	cnr Stratheden Ebrington	-1
Off	-221		" "	+1
On	-185	Water Meter	Ebrington 40/42	-4
Off	-182		" "	+1
On	-184	FH	40 " "	+5
Off	-185		40/38 "	-4
On	-103	Water Meter	OPP40 Pole 62141	-21
Off	-108		" "	+39
On	-558	Fence	" "	-2
Off	-554		" "	+3
On	-640	MEN	" "	-1
Off	-619		" "	+1
On	-609	Water Meter	" "	-39
Off	-570		" "	+3
On	-456	FH	" "	-2
Off	-454		" "	+3
On				
Off				
On				
Off				

TESTED BY J.3

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1.

Unit Reading 7.9V 6A

Date 27.8.96

	Reading	Test Point I.D.	Location	Swing
On	-605	Fence	Socker Ground Cnr Ipswich Archerfield.	-5
Off	-600			
On	-477	Light Pole	NW. " "	00
Off	-477			
On	-465	Light Pole	SW " "	-2
Off	-463			
On	-433	Property Pole	" "	00
Off	-433			
On	-511	Light Pole	SE " "	+5
Off	-516			
On	-316	Water Pipe		00
Off	-316			
On	-473	MEN	Archerfield Rd. Pole 23085 ABx1883	+6
Off	-479			
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				

TESTED BY J. J

Brisbane Water Engineering Services**Electrical Engineering Unit****Cathodic Protection Interference Survey Results Form**

Project Wacol to Oxley Sect 1 Unit Reading 7.9V 6A Date 23.8.96

	Reading	Test Point I. D.	Location	Swing
On	-531	Fence	Transformer Marker	00
Off	-531		Archerfield/Boundary	
On	-428	MEN	Archerfield Rd.	+9
Off	-437		Pole 23086	
On	-491	FH	" "	+1
Off	-492		" "	
On	-598	MEN	" "	00
Off	-598		A/B Pole 23087	
On	-444	Light Pole	Bernoulie St	00
Off	-444		372537 Pole	
On	-748	Light Pole	" "	-6
Off	-742		372538 Pole	
On	-687	Fence	P&O Catering	+6
Off	-693		" "	
On	-605	Retic Valve	" "	-00
Off	-605		" "	
On	-596	Fence	Archimedes and	+1
Off	-597		Bernoulie St	
On	-557	FH	" "	00
Off	-557		" "	
On	-552	Retic Valve	Pacific Rim	+1
Off	-553		Archimedes	
On	-515	FH	" "	+1
Off	-516		" "	
On	-407	Frame	Sub 12. Seq/eb	00
Off	-407		Archimedes	
On	-605	Fence	Thrifty Hire Cnr	-5
Off	-600		Ipswich / Archimedes	
On				
Off				

TESTED BY J S

Brisbane Water Engineering Services

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1

Unit Reading 7.9V 6A

Date 22.8.96

	Reading	Test Point I.D.	Location	Swing
On	-4.55	EXT	Park @ end of Ducie ST.	+9
Off	-4.64	HWS		
On	-3.44	Leg 707	Seq/eb HT Tower in Park, near Ipswich Rd	+1
Off	-3.45			
On	-3.68	Leg 7198	" "	-1
Off	-3.67			
On	-3.53	Leg 7198 Rear	" "	-1
Off	-3.52			
On	-3.56	Leg 707 Rear	" "	-1
Off	-3.55			
On	-4.73	Leg 167	Seq/eb HT Tower in Park near Rail line	-4
Off	-4.69			
On	-3.81	Leg 7198	" "	-5
Off	-3.76			
On	-4.70	Leg 167 Rear	" "	-4
Off	-4.66			
On	-4.33	Leg 7198 Rear	" "	-6
Off	-4.27			
On	-7.60	Railing	Railing front of club hse Nth end.	+1
Off	-7.61			
On	-3.0	Irrigation Pipe	between small and Large Goal Posts	00
Off	-3.0			
On	-8.60	Goal Posts	Small Posts direct and Loose in Ground.	+1
Off	-8.61			
On	-8.82	Goal Posts	Large @ Nth end.	00
Off	-8.82			
On				
Off				
On				
Off				

TESTED BY J.J

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1 Unit Reading 7.9 V 6 A... Date 21.8.96

	Reading	Test Point I.D.	Location	Swing
On	-553	Water Meter	74 Station Rd.	-3
Off	-550			
On	-503	Retic Valve	Cnr Harington and Station Rd.	00
Off	-503			
On	-426	Water Meter	10 Harington	00
Off	-426			
On	-405	F H	20 "	-2
Off	-403			
On	-359	Water Meter	" "	00
Off	-359			
On	-713	Fence	28/24 "	+1
Off	-714			
On	-463	Water Meter	32. "	-4
Off	-459			
On	-416	F H	" "	-1
Off	-415			
On	-488	Water Meter	40 "	-3
Off	-485			
On	-436	F H	48 "	00
Off	-436			
On	-394	Water Meter	Park @ end of Ducie St	+1
Off	-395			
On	-826	Fence	@ water Meter	-1
Off	-825			
On	-435	Power Board Earth	Park.	+4
Off	-439			
On	-42	Earth Stake	Toilet Block	00
Off	-42			
On	-469	Tap	club House	+8
Off	457			

TESTED BY J.J.

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1.

Unit Reading 7.9 V 6A

Date 20.8.96

	Reading	Test Point I.D.	Location	Swing
On	-384	Water Meter	68 Harington	00
Off	-384		"	
On	-395	FH	64 "	00
Off	-395		"	
On	-481	MEN 7184	61 "	-8
Off	-473		"	
On	-460	Water Meter	Cnr Stratheden and Harington	-8
Off	-452		"	
On	-332	Water Meter	43 Ducie St	+3
Off	-335		"	
On	-323	FH	" "	00
Off	-323		"	
On	-528	Water Meter	37 "	-13
Off	-505		"	
On	-511	Water Meter	29 "	-8
Off	-503		"	
On	-496	FH	27 "	00
Off	-496		"	
On	-124	Fence	21/19 "	-1
Off	-123		"	
On	-400	Water Meter	19 "	00
Off	-400		"	
On	-520	Fence	17	+1
Off	-519		"	
On	-395	Water Meter	Cnr Station Rd Ducie	+1
Off	-396		"	
On	-520	FH	" " "	00
Off	-520		"	
On	-627	Fence	66/70 Station Rd.	+3
Off	-630		"	

TESTED BY J.J

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1

Unit Reading 7.9 V 6A

Date 19-8-96

	Reading	Test Point I. D.	Location	Swing
On	-639	Fence	85/87 Ducie St	-6
Off	-633			
On	-447	Water Meter	87 "	-9
Off	-438			
On	-396	MEN Pole	" "	-3
Off	-393			
On	-424	Water Meter	97 "	-4
Off	-420			
On	-618	Fence	cnr Strathaird/Ducie	00
Off	-618			
On	-407	Water Meter	95 Strathaird.	00
Off	-407			
On	-425	MEN A/B	" "	00
Off	-425			
On	-427	Valve Retic	Cnr Strathaird. and Harington	06
Off	-427			
On	-442	Water Meter	96 Harington	00
Off	-442			
On	-536	FH	92 "	00
Off	-536			
On	-626	Fence	84 "	+7
Off	-633			
On	-463	Water Meter	" "	00
Off	-463			
On	-488	Water Meter	76 "	00
Off	-488			
On	-463	FH	" "	00
Off	-463			
On	-473	Fence	76/74 "	+6
Off	-479			

TESTED BY J.J

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1. Unit Reading 7.9V 6A Date 19-8-96

	Reading	Test Point I. D.	Location	Swing
On	-753	Fence	26/24 Jervis St	+1
Off	-754			
On	-309	FH	18 "	00
Off	-309		"	
On	-325	Water Meter	"	-1
Off	-324		"	
On	-363	Water Meter	Cnr Ipswich/Service	-12
Off	-351		"	
On	-333	FH	" " "	00
Off	-333		"	
On	-332	MEN	" " "	
Off	-318		Power Pole	-14
On	-24	Water Meter	Park	
Off	-22		Jervis St	-2
On	-505	MEN	Ducie St Pole	
Off	-477		1309. Supply Rect.	-28
On	-588	Fence	51 Ducie St	-1
Off	-587			
On	-564	Water Meter	"	00
Off	-564		"	
On	-378	FH	59 "	00
Off	-378		"	
On	-486	Water Meter	63 "	00
Off	-486		"	
On	-475	FH	75 "	00
Off	-475		"	
On	-485	Water Meter	" "	00
Off	-485		"	
On	-509	Fence	75/79 "	
Off	-492		"	-17

TESTED BY JJ

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Wacol to Oxley Sect 1 Unit Reading 7.9 V 6 A. Date 19-8-96

	Reading	Test Point I. D.	Location	Swing
On	-358	MEN	67 Strathaird St Power Pole	-3
Off	-355		cnr Strathnaver st Strathaird Pole 19364	-5
On	-408	MEN	"	+1
Off	-403		"	00
On	-478	FH	"	-13
Off	-479		"	-2
On	-376	Water Meter	77 strathnaver St	00
Off	-376		Pole 62143 "	+1
On	-426	MEN	"	-13
Off	-413		"	00
On	-769	Fence	75/69. Strathnaver St	-6
Off	-767		"	-1
On	-460	FH	69 "	00
Off	-460		"	+1
On	-462	Water Meter	"	-1
Off	-463		"	00
On	-568	Retic Valve	cnr Jervis and Strathnaver Sts	+1
Off	-568		"	-3
On	-366	FH	"	+1
Off	-367		"	-3
On	-265	Water Meter	48 Jervis St.	-2
Off	-262		"	-42
On	-459	"	42 "	+1
Off	-460		"	-30
On	-527	Fence	40/36 "	-6
Off	-521		"	-30
On	-433	Water Meter	36 "	-42
Off	-391		"	-30
On	-432	Water Meter	28 "	-30
Off	-402		"	-30

TESTED BY JJ

Brisbane Water Engineering Services
Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1 Unit Reading 6 Amps Date 28-8-96

	Reading	Test Point I.D.	Location	Swing
On	-620	Steel Post	Park Sanananda St	
Off	-620		Basket Ball Court	00
On	-785	valve	opp Pole 61318	
Off	-505		Sanananda St	-280
On	-900	MEN	Pole 62289. Rail X.	
Off	-901		Sanananda St	+1
On	-893	MEN	Pole 62288 Forge	00
Off	-893			
On	-649	MEN	Power Pole Forge cl	
Off	-649			60
On	-625	Earth Stake	BMX TRACK	
Off	-627		Forge close	+2
On	-471	Water Pipe	"	
Off	-471			00
On	-651	Judges Stand	"	
Off	-651			00
On	-361	Eating Stand	"	
Off	-361			00
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				
On				
Off				

TESTED BY J.J.....

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Wacol to Oxley Sect 1 Unit Reading 6 Amps..... Date 28-8-96

	Reading	Test Point I.D.	Location	Swing
On	-34	Fence	Sanananda St. Sewerage P/stn.	00
Off	-34		"	
On	-548	Tap	"	+1
Off	-549			
On	-415	MEN	Air breaker Pole 61843	00
Off	-415			
On	-462	Pipe	Pipe across Creek Sanananda St. 350m	00
Off	-462			
On	-686	Fence	Cnr Markham & Sanananda St.	00
Off	-686			
On	-363	FH	"	00
Off	-363			
On	-354	Water Meter	54 Sanananda St	00
Off	-354			
On	-484	" 46	"	00
Off	-484			
On	-656	Fence	46 "	00
Off	-656			
On	-349	Water meter	44 "	00
Off	-349			
On	-122	Water meter	32 "	00
Off	-122			
On	-265	Water meter	18 "	00
Off	-265			
On	-421	MEN DRA9.	Cnr Ipswich and Sanananda Pole 32158	+2
Off	-423			
On	-389	Lt Pole 371272	Cnr Ipswich and Sanananda 371272	+1
Off	-390			
On	-405	Shelta	Bus Stop opp 18 Sanananda St	00
Off	-405			

TESTED BY J J

Brisbane Water Engineering Services

CP Form No. 21

Electrical Engineering Unit**Insulated Joint Testing Details Form**Project Wacol to Oxley Sect 1Date 30-7-96**DESCRIPTION****MAINS DETAILS:****LOCATIONS:****SIZE:****MATERIAL:****COATING:****VALVE No.**Wacol Stn Rd. F 15 UBD1670M S C LMedium density Fusion bonded PolyethyleneA 1277**IN GROUND TESTING** P.I.TFlange A upstreamBOLT TO FLANGE RESISTANCE: > 200 ΩsNUMBER OF BOLT: 32FLANGE TO FLANGE RESISTANCE: 60 Ωs.

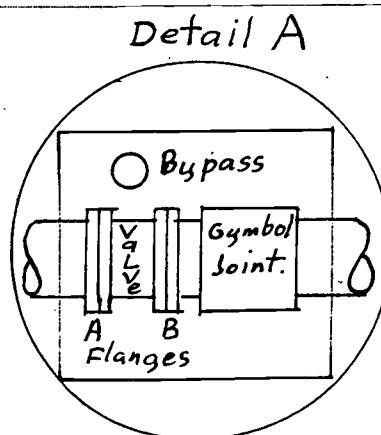
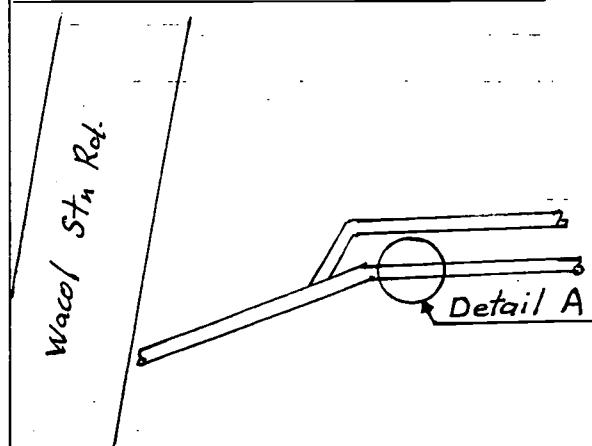
INSULATION CHECKER MODEL 702:

POTENTIAL DIFFERENCE TO REFERENCE CELL:PROTECTED SIDE: -1387 To CuCuSO₄ CellUNPROTECTED SIDE: -1343 To CuSO₄ Cell**ABOVE TESTING**

BOLT TO FLANGE RESISTANCE:

NUMBER OF BOLTS:

FLANGE TO FLANGE RESISTANCE:

COMMENTS / LOCATION DRAWINGTESTED BY J. J.

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering Form

Project ...Wacol to Oxley..... Sect. 1.....

Date 30-7-96

TP Location Wolston Rd 197 F 15.....

TP No. /

Mains Size 1670 mscl.....

TP Type B + B.....

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+151

CuSo₄ REFERENCE TO PIPE

-972

ZINC TO CuSo₄

-1120

EARTH TESTINGTEST NO. 1

PIN SPACING

2

RESISTIVITY

6.5 ohm mtr

MEGGER READING

.5

TEST NO 2

PIN SPACING

RESISTIVITY

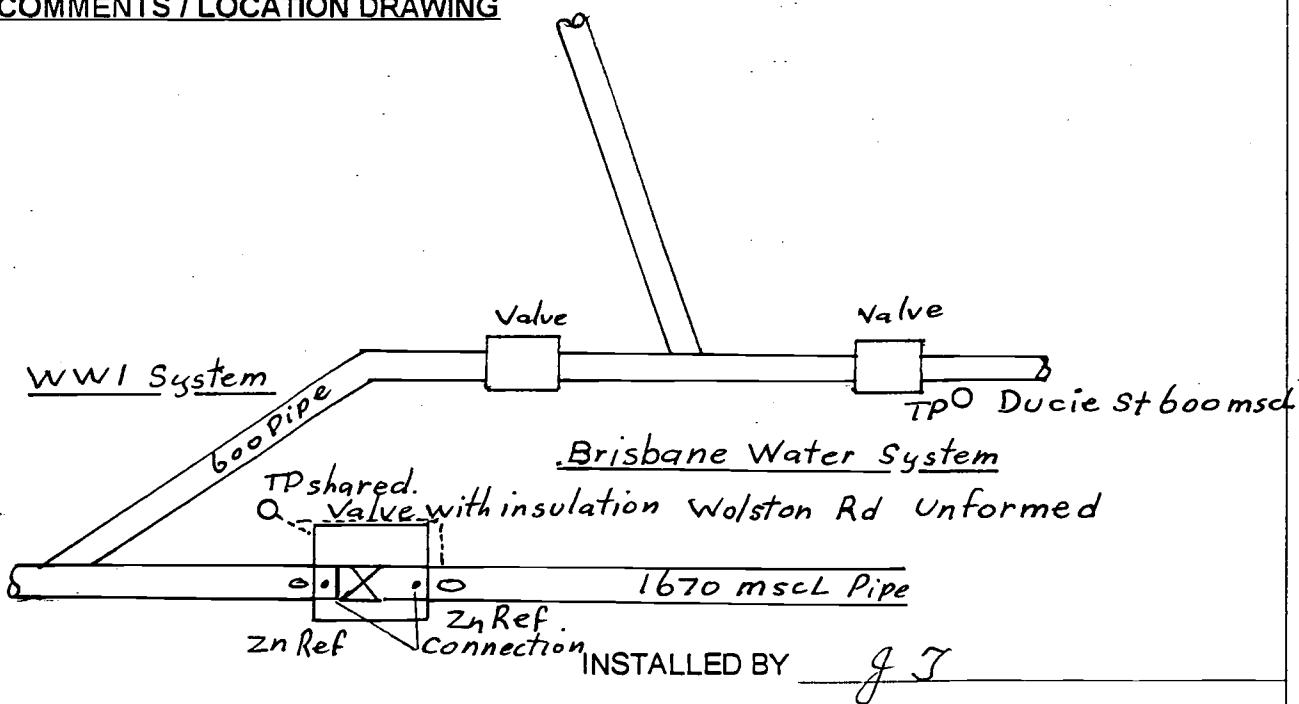
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**Project Wacol to Oxley Sect 1Date 30-7-96TP Location Wolston Rd 197 J 15TP No. 2Mains Size 1670 msclTP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+220CuSo₄ REFERENCE TO PIPE-842ZINC TO CuSo₄-1064**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

9.5 ohm mtr

MEGGER READING

.76TEST NO 2

PIN SPACING

RESISTIVITY

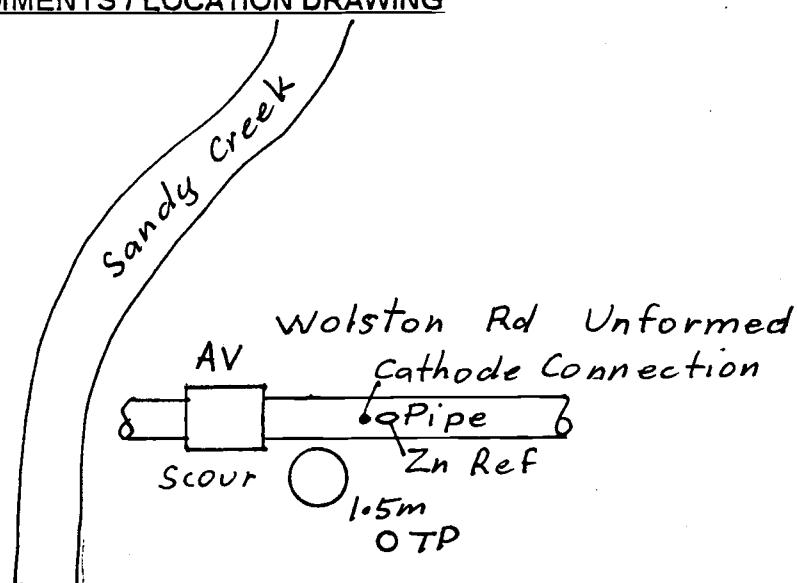
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

INSTALLED BY

JJ

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**

Project ...Wacol to Oxley Sect 1.....

Date30-7-96

TP Location Wolston Rd 197 m 16.....

TP No.3.....

Mains Size ...16.70 ms CL.....

TP TypeB.....

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+344

CuSo₄ REFERENCE TO PIPE

-818

ZINC TO CuSo₄

-1163

EARTH TESTINGTEST NO. 1

PIN SPACING

2

RESISTIVITY

MEGGER READING

1.07

14 ohm mtr

TEST NO 2

PIN SPACING

RESISTIVITY

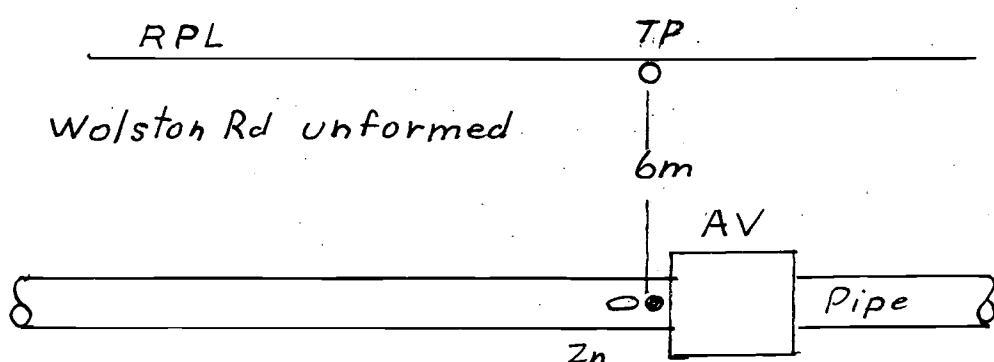
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

INSTALLED BY

J J

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering FormProject Wacol to Oxley Sect 1Date 30-7-96TP Location Sanananda st 197 N/16TP No. 4Mains Size 1670 mscfTP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+ 317CuSo₄ REFERENCE TO PIPE- 823ZINC TO CuSo₄- 1140**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

12.6 ohm mtr.

MEGGER READING

.97TEST NO 2

PIN SPACING

RESISTIVITY

MEGGER READING

TEST NO 3

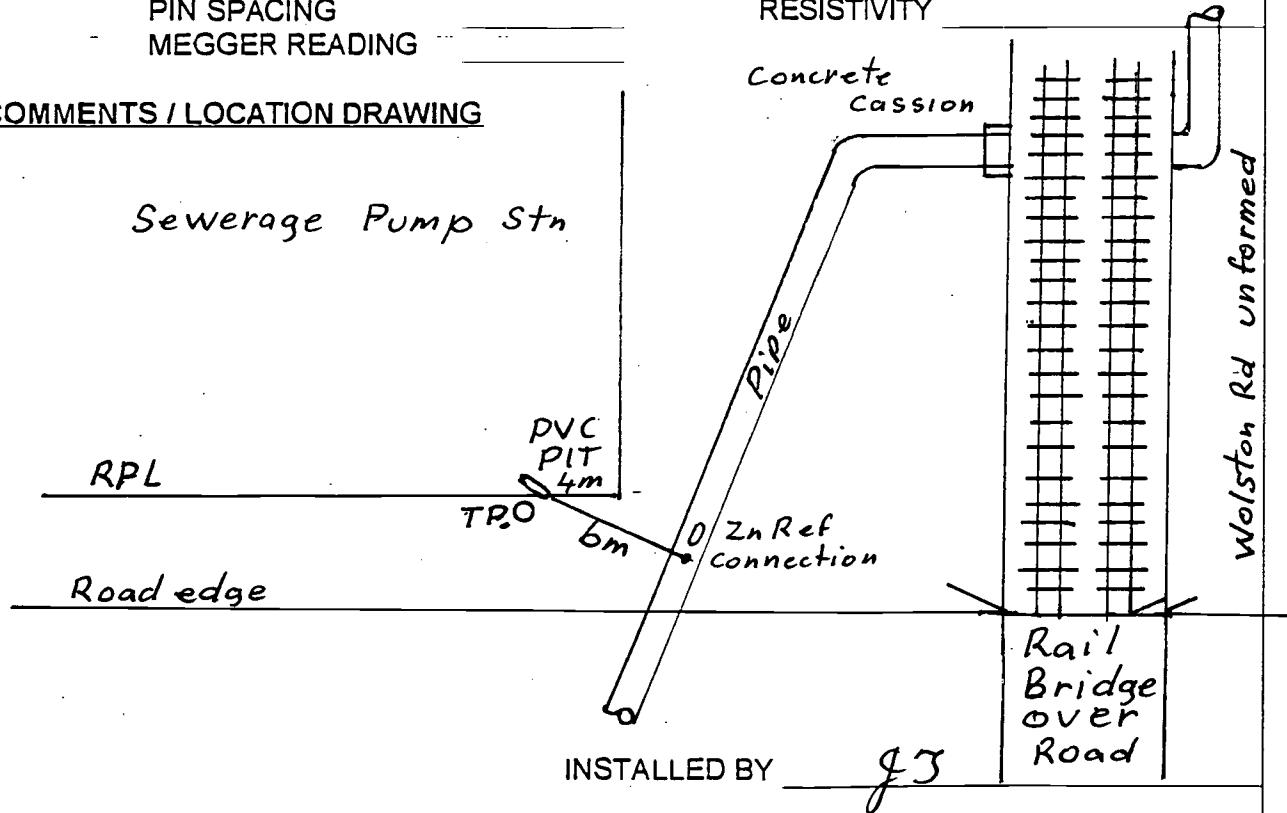
PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

Sewerage Pump Stn



Revision 09/28/95

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering FormProject Wacol to Oxley Sect.1Date 30-7-96TP Location Centenary Hwy 198 Q1bTP No. 5Mains Size 1670 m sclTP Type B + Silver chloride
on Steel Cassion**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+336CuSo₄ REFERENCE TO PIPE-832ZINC TO CuSo₄-1169**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

9.1 ohm meter

MEGGER READING

.7TEST NO 2

PIN SPACING

RESISTIVITY

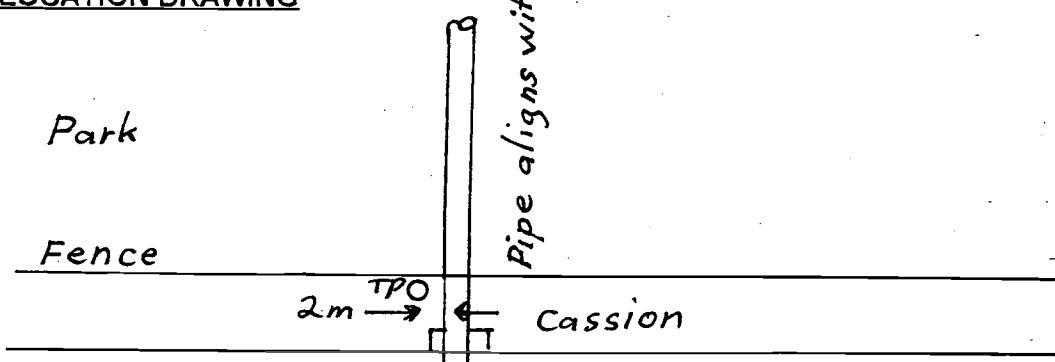
MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

INSTALLED BY _____

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering Form

Project Waco! to Oxley Sect. 1.....

Date 30-7-96.....

TP Location DUCIE ST 197 R16.....

TP No. 6.....

Mains Size 1670 mscL.....

TP Type Coupon

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE)

1.3

ZINC REFERENCE TO PIPE

-33

CuSo₄ REFERENCE TO PIPE

-1049

ZINC TO CuSo₄

-1012

EARTH TESTINGTEST NO. 1

PIN SPACING

2 m

RESISTIVITY

13 ohm mtr

MEGGER READING

1

TEST NO 2

PIN SPACING

RESISTIVITY

MEGGER READING

TEST NO 3

PIN SPACING

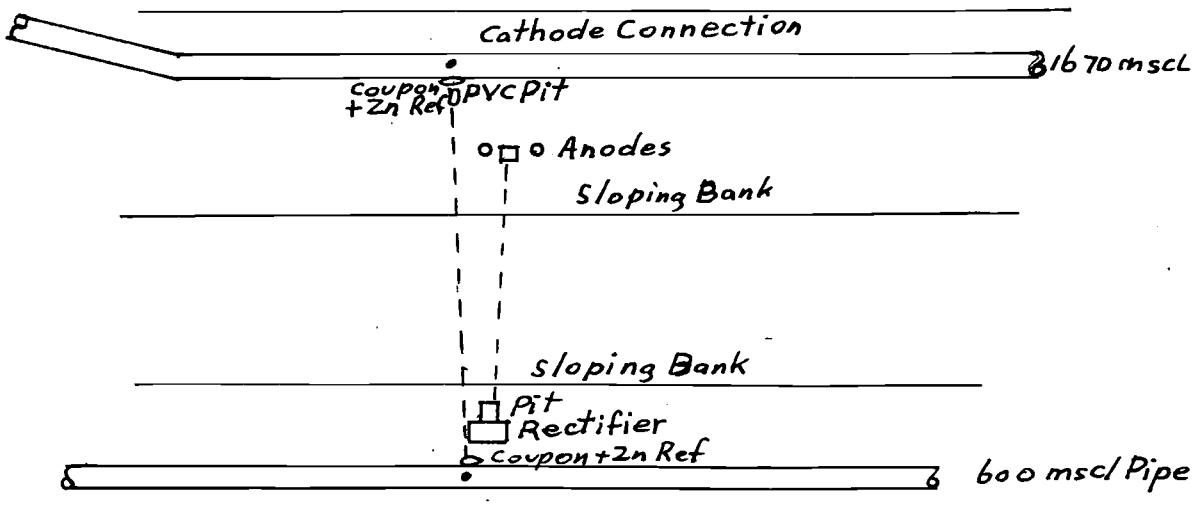
RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

Stratheden St

Ebrington St



INSTALLED BY J.J.

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering FormProject Wacol to Oxley Sect¹1Date 30-7-96TP Location Archimedes 198 A 18TP No. 7Mains Size 1670 M.S.C.L.TP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.01

ZINC REFERENCE TO PIPE

+256CuSo₄ REFERENCE TO PIPE-866ZINC TO CuSo₄-1122**EARTH TESTING**TEST NO. 1

PIN SPACING

2

RESISTIVITY

MEGGER READING

565 ohm mtrTEST NO 2

PIN SPACING

RESISTIVITY

MEGGER READING

TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

COMMENTS / LOCATION DRAWING

Archimedes St

Ipswich Side Rd

Fence

TP O

←1.5m

Ipswich divided Rd.

Cassion Tunnled under Rd.

INSTALLED BY

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering Form

Project Wacol to Oxley Sect 1.....

Date 30-7-96.

TP Location Bernoulli St 198 B19

TP No. 8.....

Mains Size 1670 MSCL.....

TP Type B x 4.....

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE)

.05

ZINC REFERENCE TO PIPE

+140

CuSo₄ REFERENCE TO PIPE

-774

ZINC TO CuSo₄

-944

EARTH TESTINGTEST NO. 1

PIN SPACING

2

RESISTIVITY 104 ohm mtr

MEGGER READING

8

TEST NO 2

PIN SPACING

RESISTIVITY

MEGGER READING

TEST NO 3

PIN SPACING

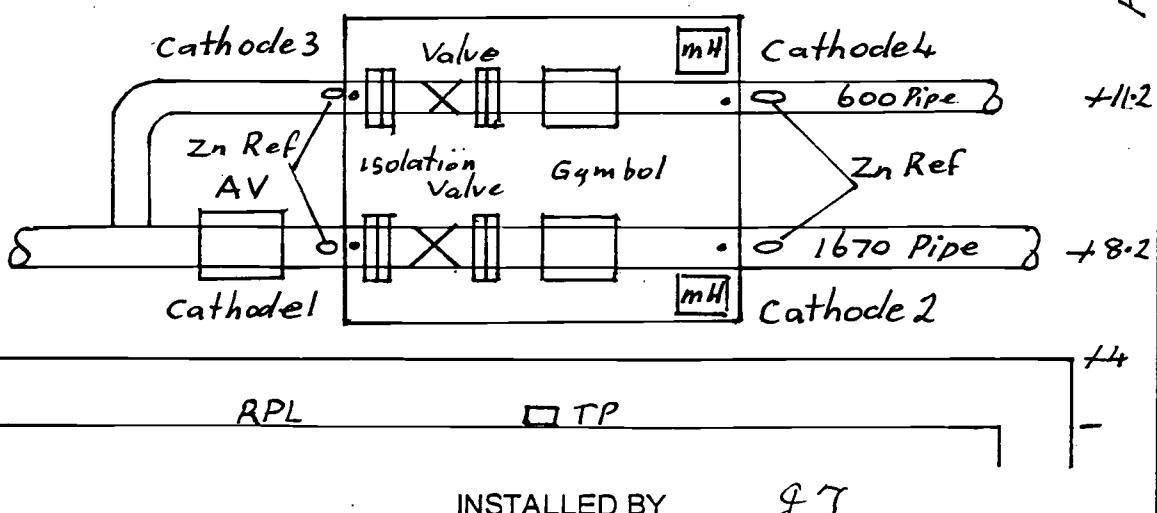
RESISTIVITY

MEGGER READING

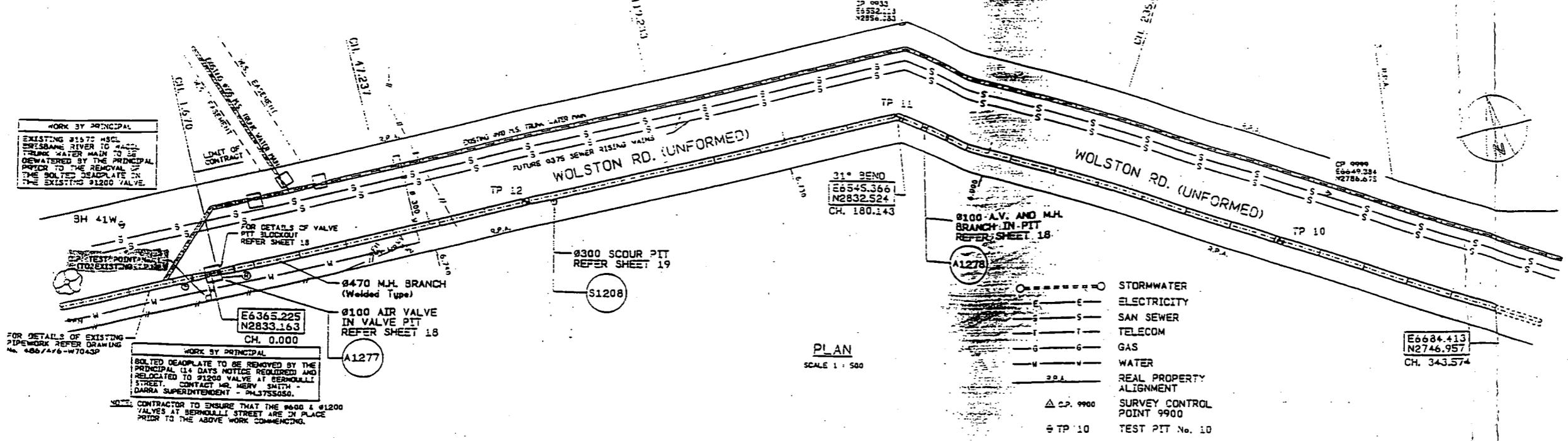
COMMENTS / LOCATION DRAWING

Bernoulli st

Archerfield.



Cathodic Protection System - Wacol to Oxley Water Main - Section 1 - OM Manual



NOTES

GENERAL

- THIS DRAWING SHEET IS BEING ISSUED IN CONJUNCTION WITH OTHER CONTRACT DOCUMENTATION AND DRAWINGS.
- ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT STANDARDS, SPECIFICATIONS, REGULATIONS AND CODES AND THE STATE AND RELEVANT BUILDING AUTHORITY.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION. DRAWINGS SHALL NOT BE SCALLED.
- ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
- NO SUBSTITUTE MATERIALS EXCEPT AS APPROVED BY THE SUPERINTENDENT.
- THE CONTRACTOR SHALL NAME HIMSELF, FULLY UNQUOTE, WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
- ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKERS COMPENSATION ACT, INDUSTRIAL RELATIONS ACT AND OTHER APPROPRIATE ACTS, REGULATIONS AND GUIDELINES.
- FOR DETAILS OF SCOUR PITS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.
- MANHOLE COVERS AND SPINOLE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR RELEASE PITS, BOLTED MANHOLES, ETC. SHALL BE SUPPLIED BY THE PRINCIPAL.

PIPEWORK

- INDICATED GUT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLANGED BRANCHES INCLUDING REREGULATION CONNECTIONS, SCOURS AND AIR VALVES.
- UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.
- EXTERNAL COATINGS ARE NOT TO BE APPLIED TO PIPEWORK WHICH IS SURROUNDED OR COVERED IN CONCRETE.
- NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.
- THE BOOTS, MACH. AND ELEC. SERVICES BRANCH TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.

TREES

- NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

MAIN CONSTRUCTION DETAILS	DATE COMMENCED	DATE COMPLETED
SIGNATURE	DATE	

INDICATE AMENDMENT/ASSESS TO THIS FOR INTIALS
AMENDMENT & ISSUE REGISTER

MANAGER DIRECTOR OF PLANNING & DESIGN

DATE DIRECTOR OF CONSTRUCTION

DATE DIRECTOR OF MA & E SERVICES/OPERATIONS

DATE DIRECTOR OF LOGISTICS

DATE ENGINEER IN CHARGE

DATE SUPERVISOR / L / 3 / 04

DATE SURVEYOR 8095A

DATE FIELD BOOK 7974/6

A.H. DATUM SURVEYED 8.0000

CADD FILE NO. 46W7082

JOB FILE NO. 4705/SK2881

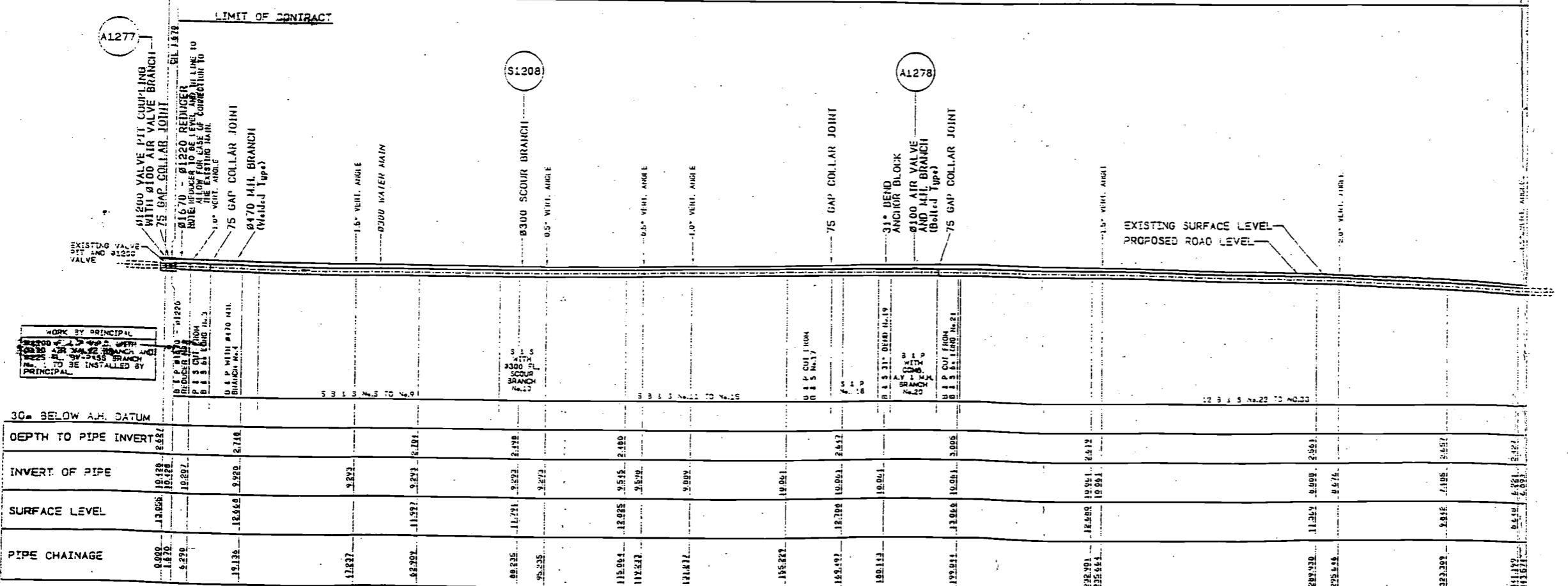


PROJECT MAJOR DISTRIBUTION MAINS
LOGAN CITY TRUNK MAIN AMPLIFICATION

TITLE WACOL TO OXLEY SECTION 1
1670 DIA. MSCL WATER MAIN
PLAN AND LONGITUDINAL SECTION

SCALE AS SHOWN IN 2 OF 20 SHEETS

DRAWING NO. 486/4/6-W7082P AMEND 0



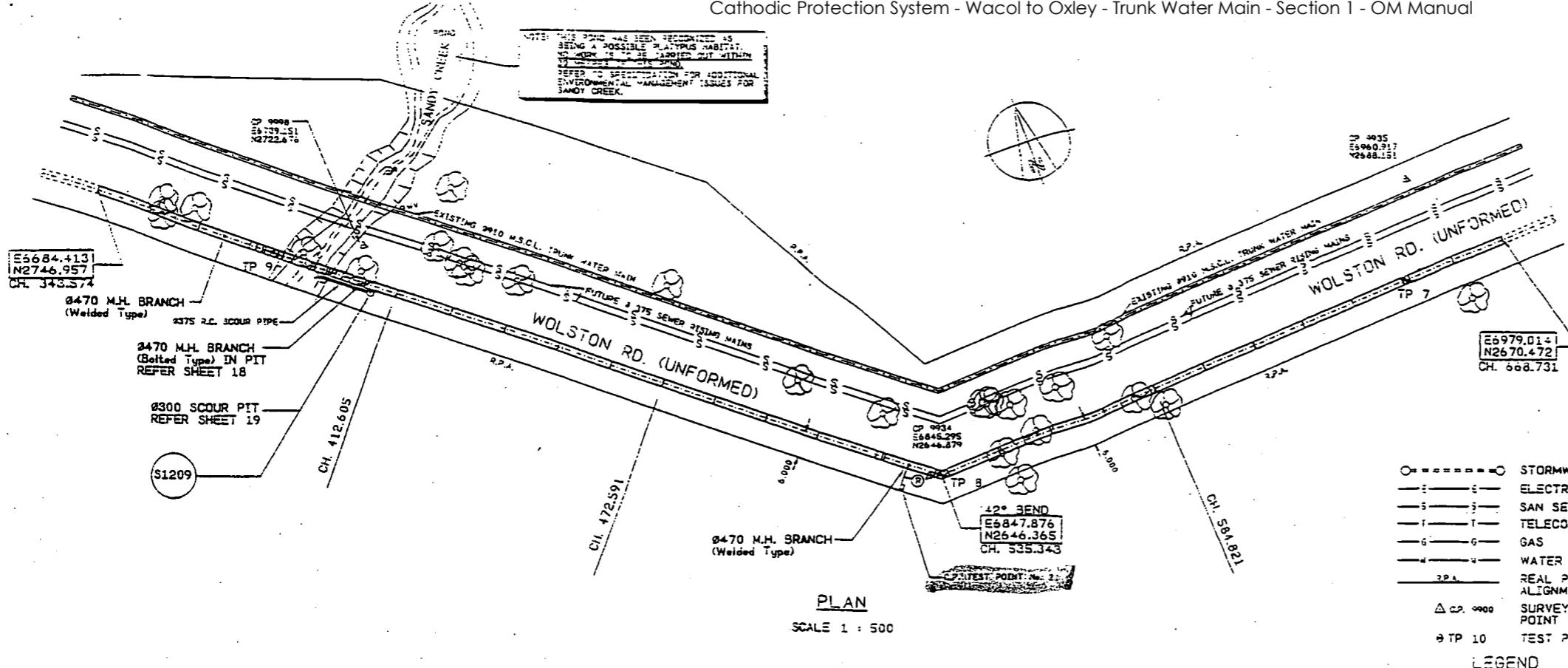
LONGITUDINAL SECTION

CH. 0.000 - 343.574

SCALES HORIZONTAL 1:500
VERTICAL 1:500

SCALE OF METRES
1:500

NOTES



Ø1670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

IMPOSED CURRENT CATHODIC PROTECTION

SCALE 1 : 500

LEGEND

LONGITUDINAL SECTION

CH. 343.574 - 668.731

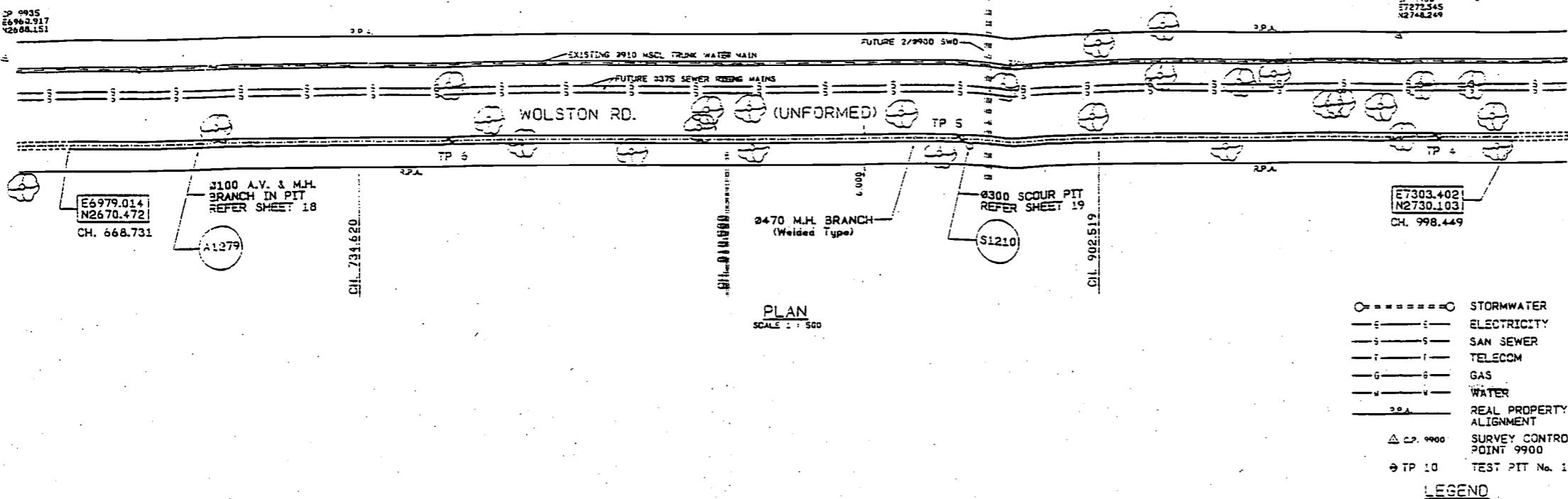
**SCALES HORIZONTAL 1:500
VERTICAL 1:500**

Scale bar markings from 0 to 35 meters. Below the scale bar, the text "SCALE OF METRES" is printed in capital letters, followed by "1:500" below it.

GENERAL		
G1 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTATION AND DRAWINGS.		
G2 ALL MATERIALS AND WORKMEN SHALL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT STANDARDS AUSTRALIA SPECIFICATION LS 2000 AND CS223 AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.		
G3 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION DRAWINGS WHICH NOT BE SCALLED.		
G4 ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.		
G5 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.		
G6 THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND AROUND THE SITE OF THE CONTRACT AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.		
G7 ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.		
G8 FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.		
G9 MANHOLE COVERS AND SPINOLE BOXES FOR LOGAN CITY LOGAN PITS, AIR VALVE PITS, BOLTED MANHOLE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL.		
PIPEWORK		
P1 INSULATED BOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL PLUMBED BRANCHES INCLUDING RETEGLATION CONNECTIONS, SCOURS AND AIR VALVES.		
P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.		
P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED WHERE PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.		
P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.		
P5 THE 3000 MECH. AND ELEC. SERVICES BRANCH TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.		
TREES		
T1 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.		
MAIN CONSTRUCTION DETAILS		
DATE COMMENCED	DATE COMPLETED	
SIGNATURE	DATE	
NOTATE AMENDMENT/ISSUE TO SUCCESSION OF INITIALS AMENDMENT & ISSUE REGISTER		
MANAGER	DIRECTOR OF PLANNING & DESIGN	
DATE	DATE	
DIRECTOR OF CONSTRUCTION	DIRECTOR OF MECH. & SERVICES	DIRECTOR OF SEWAGE & SERVICES/OPERATIONS/SAWS DISTRIBUTION
DATE	DATE	DATE
DESIGN	S.S.G. OCT '94 ENGINEER <i>[Signature]</i> IN CHARGE <i>[Signature]</i>	
DRAWN	S.S.G. OCT '94 SUPERVISOR <i>[Signature]</i> ENGINEER <i>[Signature]</i> OCT '95	
TRACED	SURVEYOR <i>[Signature]</i> 2095	
CHKD	W.G.L. NOV '94 FILE BOOK 7974/4	
A.H. DATUM	SURVEYED R. BOXALL	
CADD FILE NO	46W7083	
JOB FILE NO	(71705/5/288)	
BRISBANE CITY COUNCIL DEPARTMENT OF WATER SUPPLY & SEWERAGE PLANNING & DESIGN BRANCH		
PROJECT MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION		
TITLE WACCL TO OXLEY SECTION 1 1670 DIA MSCL WATER MAIN PLAN AND LONGITUDINAL SECTION		
SCALE AS SHOWN IN 3 OF 20 SHEETS		
DRAWING NO. 486/4/6-W7083P AMEND. 0		



CP 9936
E7272-545
X2748-249



NOTES

GENERAL

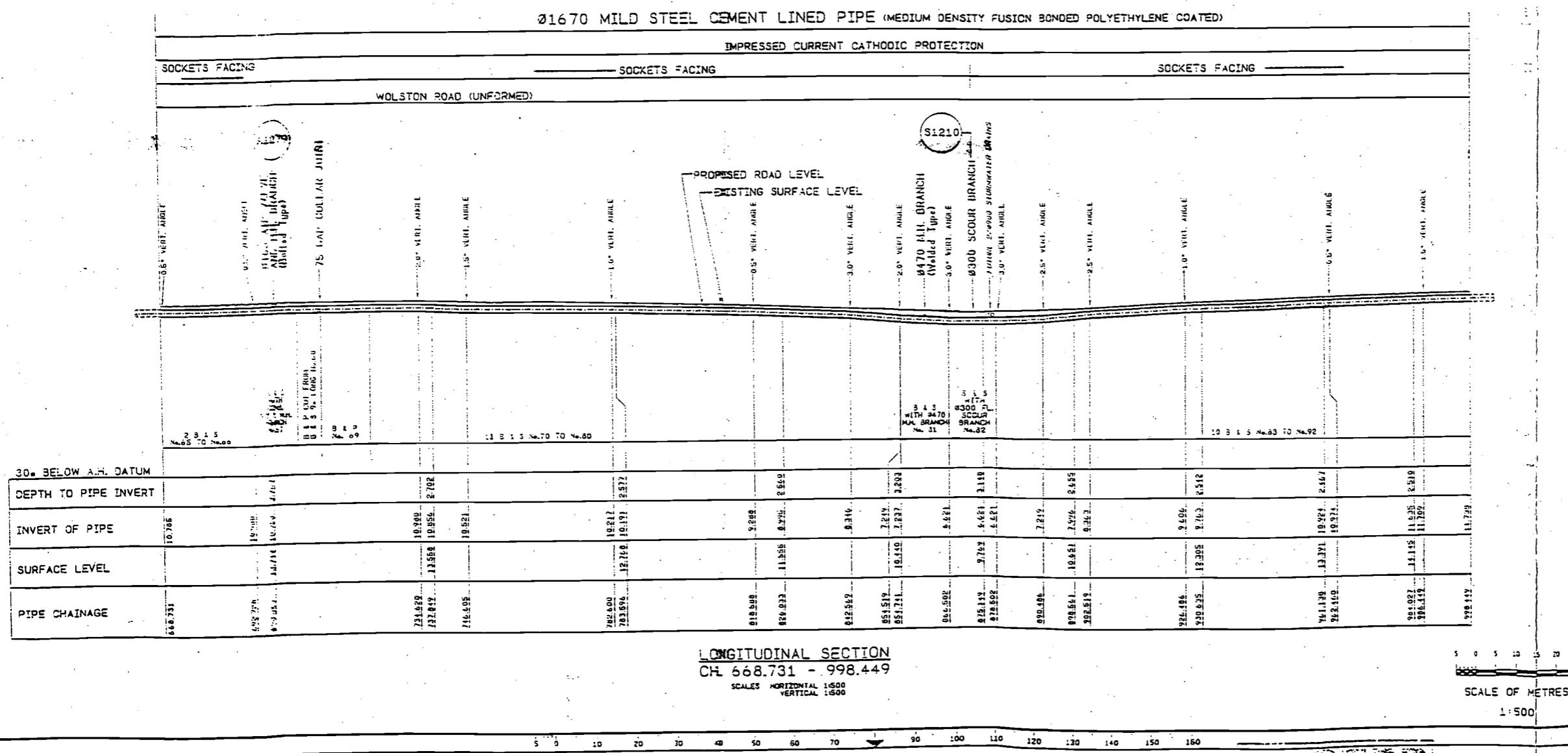
- G1 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFIC DOCUMENTATION AND DR-1003.
- G2 ALL MATERIALS AND WORKSHIPS SHALL BE IN ACCORDANCE WITH THE RELEVANT STANDARDS AUSTRALIA, SPECIFICATIONS AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.
- G3 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION. DRAWINGS SHALL NOT BE SCALED.
- G4 ANY DISCREPANCY SHALL BE RESOLVED IN THE CONTRACTOR'S FAVOUR BEFORE PROCEEDING WITH WORK.
- G5 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
- G6 THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL TAKE CARE NOT TO CAUSE DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
- G7 ALL WORK SHALL BE CARRIED OUT IN CONFORMANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.
- G8 FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.
- G9 MANHOLE COVERS AND SPINDELE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR VENT PITS, SOLID MANHOLE COVERS, SHALL BE SUPPLIED BY THE PRINCIPAL.

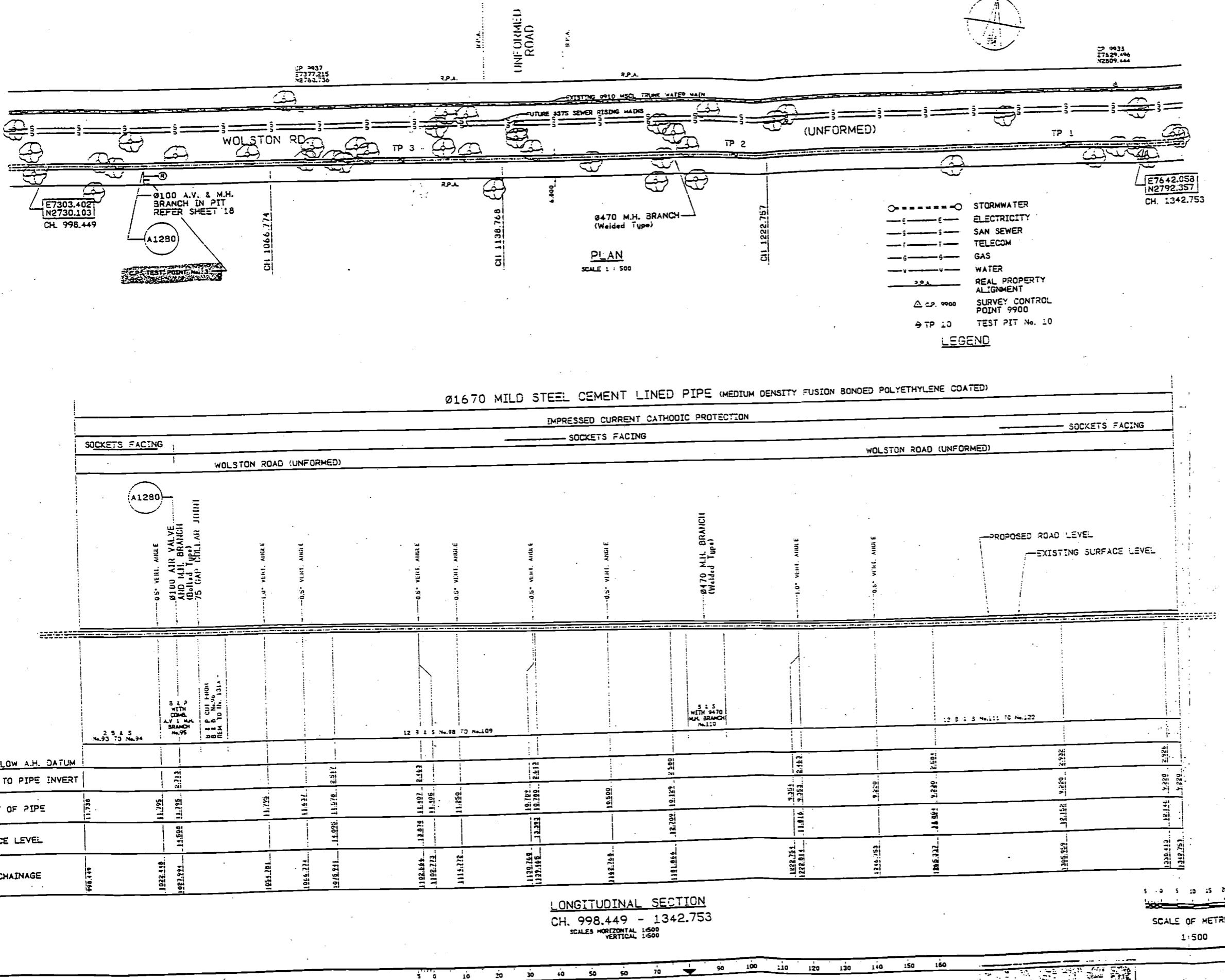
SYMBOLS

- P1 INSULATED BOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLANGED BRANCHES INCLUDING RETICULATION CONNECTIONS, SCOURS AND AIR VALVES.
- P2 UNLESS OTHERWISE INDICATED ANCHOR SHOULDS BE UNREINFORCED.
- P3 EXTERNAL CATHODES ARE NOT TO BE PLATED WHICH PIPEWORK IS FITTED AND SURROUNDED OR COVERED IN CONCRETE.
- P4 NO REINFORCEMENT IS TO BE PLACED IN OR MAKE CONTACT WITH THE PIPEWORK.
- P5 THE BOOTS MECH. AND ELEC. SERVICES BRANCH TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.

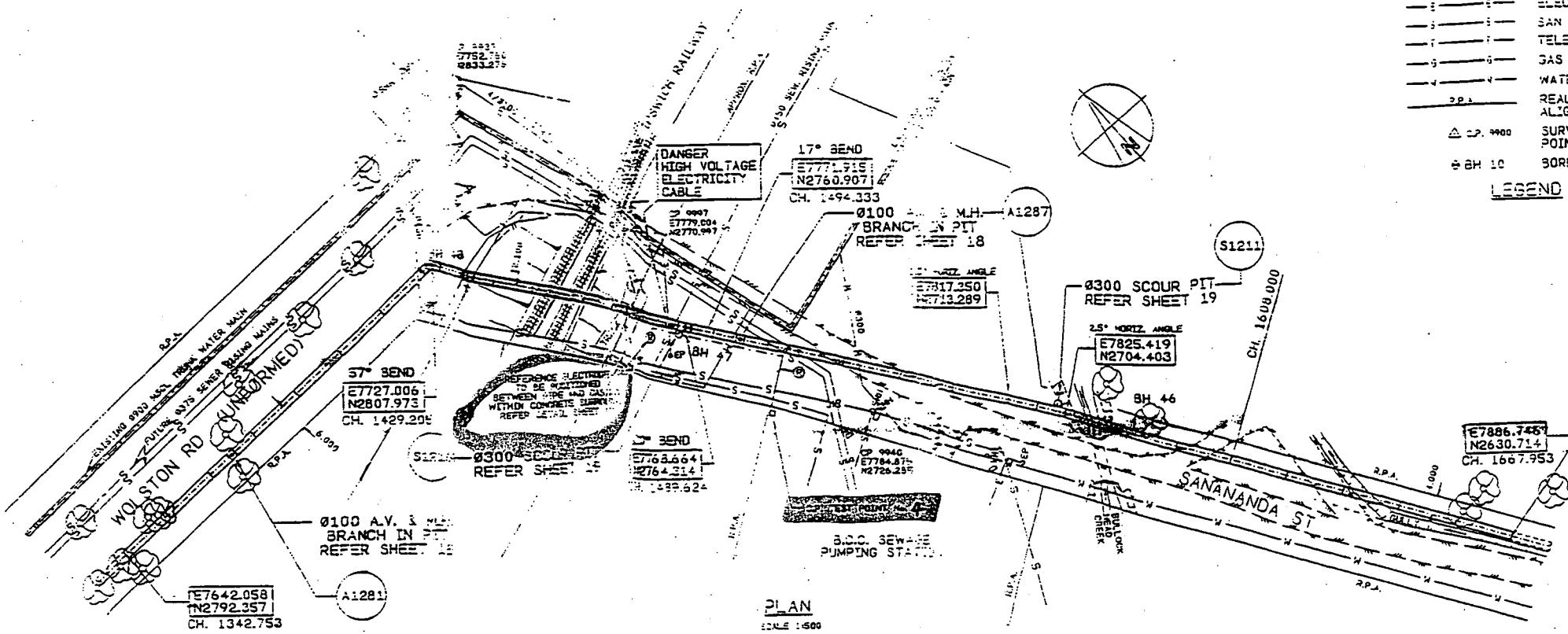
OTHER

- T1 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.





MAIN CONSTRUCTION DETAILS:		
NAME COMMENCED	DATE COMPLETED	
SIGNATURE	DATE	
INDICATE AMENDMENT/ISSUE TO ISSUE FOR INITIALS		
AMENDMENT & ISSUE REGISTER		
MANAGER	DIRECTOR OF PLANNING & DESIGN	
DATE	DATE	
DIRECTOR OF CONSTRUCTION	DIRECTOR OF WATER SERVICES DEPARTMENTS DISTRIBUTION	
DATE	DATE	
DESIGN S.S.G. OCT 94	ENGINEER IN CHARGE J.P. TAYLOR	
DRAWN S.S.G. OCT 94	SUPERVISORY ENGINEER J.P. TAYLOR	
TRACED	SURVEY NO. 2095	
DKTC M.G.L. NOV 94	FIELD BOOK 7974/6	
A.H. DATUM +6M7083	SURVEYED 2.802 ALL	
CADD FILE NO.		
JOB FILE NO.	(71705/SI284)	
BRISBANE CITY COUNCIL DEPARTMENT OF WATER SUPPLY & SEWAGE PLANNING & DESIGN BRANCH		
PROJECT MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION		
TITLE WACOL TO OXLEY SECTION 1 1670 DIA. MSCL WATER MAIN PLAN AND LONGITUDINAL SECTION		
SCALE AS SHOWN 1IN 5 OF 20 SHEETS		
DRAWING NO. 486/4/6-W708SP	AMEND 0	

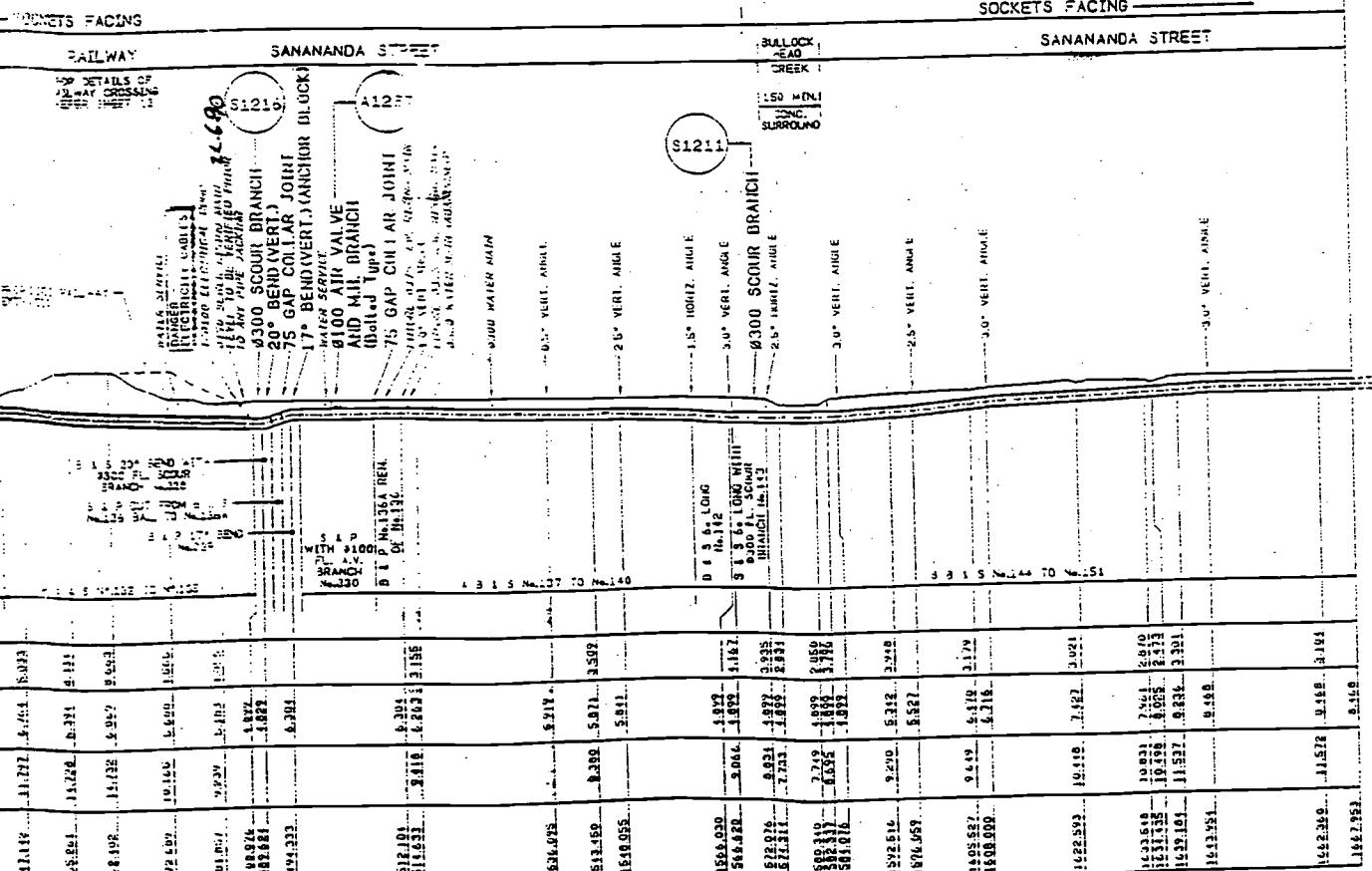


LEGEND

- GENERAL
62 THIS DRAWING IS TO BE USED IN CONjunction WITH THE CONTRACT DOCUMENTATION AND DRAWINGS.
- 63 MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT STANDARDS, AUSTRALIAN OR INTERNATIONAL, AS APPLICABLE, AND THE CLASS OF THE RELEVANT BUILDING AUTHORITY.
- 64 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE prior to ANY CONSTRUCTION. DRAWINGS SHALL NOT BE SCALED.
- 65 ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
- 66 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
- 67 THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
- 68 ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.
- 69 FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTINUING THE CONTRACT DOCUMENTATION.
- 70 MINIMUM SPACERS AND SPINOLE SICKLES SHALL BE PROVIDED IN SCOUR PITS, AIR SPACES AND SURFACE BORROW PITS. SHALL BE SUPPLIED BY THE PRINCIPAL PROVIDER.
- P1 INSULATED BOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED ON ALL PIPE CONNECTIONS, INCLUDING RETICULATION, CONNECTIONS, SCOUR AND AIR VALVES.
- P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.
- P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED WHEN PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.
- P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.
- P5 THE S.C.C. MECH AND ELEC SERVICES BRANCH TO BE CONTACTED PRIOR TO BACKFILLING. MECHANICAL AND ELECTRIC TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.
- P6 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

31570 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

IMPRINTED CURRENT CATHODIC PROTECTION



30m BELOW A.H. DATUM

DEPTH TO PIPE INVERT

1312.753

1316.092 - 11.918 2.229

1312.755

1402.755

1401.090 - 16.710 0.318 - 0.231

1401.091

1409.741

1409.742

1409.743

1411.147 - 11.712 0.312 - 0.231

1411.148

1416.624 - 14.129 - 0.311 - 0.231

1416.625

1416.626

1416.627

1416.628

1416.629

1416.630

1416.631

1416.632

1416.633

1416.634

1416.635

1416.636

1416.637

1416.638

1416.639

1416.640

1416.641

1416.642

1416.643

1416.644

1416.645

1416.646

1416.647

1416.648

1416.649

1416.650

1416.651

1416.652

1416.653

1416.654

1416.655

1416.656

1416.657

1416.658

1416.659

1416.660

1416.661

1416.662

1416.663

1416.664

1416.665

1416.666

1416.667

1416.668

1416.669

1416.670

1416.671

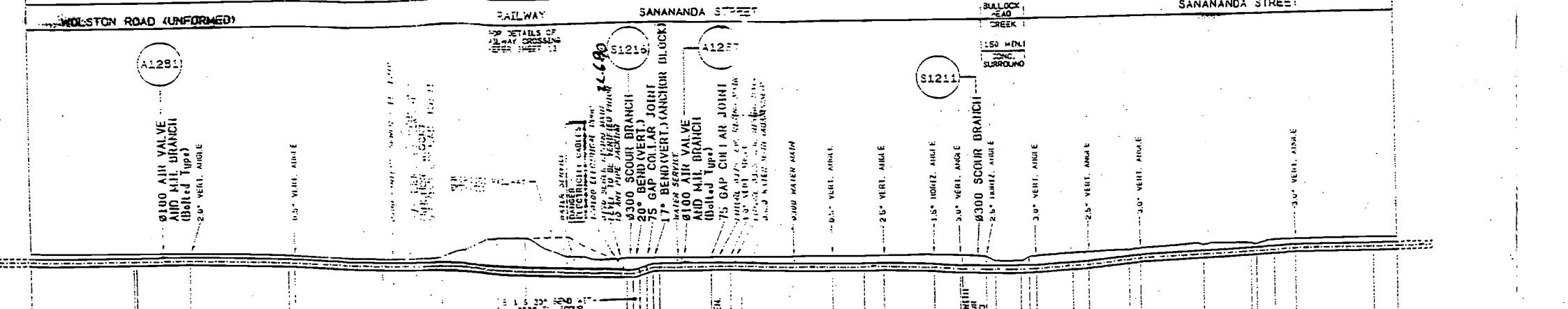
1416.672

1416.673

1416.674

1416.675

1416.676



MAIN CONSTRUCTION DETAILS:	
DATE COMMENCED	DATE COMPLETED
SIGNATURE	DATE
INDICATE AMENDMENT/ISSUE TO ISSUE FOR INITIALS	
AMENDMENT & ISSUE REGISTER	
MANAGER	DIRECTOR OF PLANNING & DESIGN
DATE	DATE
DIRECTOR OF CONSTRUCTION	DIRECTOR OF SEWAGE SERVICES/OPERATIONS & DISTRIBUTION
DATE	DATE
SESSION 1 S.S.G. OCT 74 IN CHARGE	SESSION 1 S.S.G. OCT 74 IN CHARGE
DRAWN S.S.G. OCT 74 SUPERVISOR	DRAWN S.S.G. OCT 74 SUPERVISOR
TRACED	TRACED
OK'D S.G.L. NOV 74 FIELD	OK'D S.G.L. NOV 74 FIELD
OK'D H.G.L. NOV 74 BOOK	OK'D H.G.L. NOV 74 BOOK
A.H. DATUM SURVEYED 2.800 ALL	A.H. DATUM SURVEYED 2.800 ALL
CADD FILE NO. 4670866	CADD FILE NO. 4670866
JOB FILE NO. 171785/S12881	JOB FILE NO. 171785/S12881

BRISBANE CITY COUNCIL
DEPARTMENT OF WATER SUPPLY & SEWERAGE
PLANNING & DESIGN BRANCH

PROJECT
MAJOR DISTRIBUTION MAINS
LOGAN CITY TRUNK MAIN
AMPLIFICATION

TITLE
WACOL TO OXLEY SECTION 1
1670 DIA. MSCL WATER MAIN
PLAN AND LONGITUDINAL SECTION

SCALE AS SHOWN IN 1:500 OF 20 SHEETS

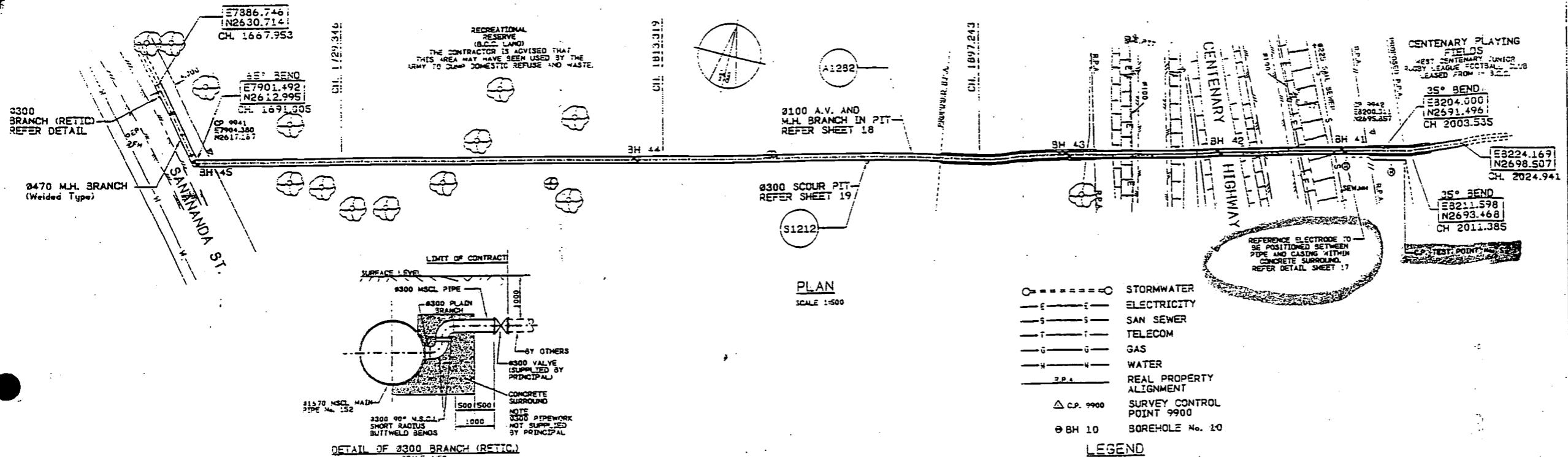
DRAWING NO. 486/4/6-W7086P AMEND 0

SCALE OF METRES
1:500

LONGITUDINAL SECTION
CH.1312.753 - 1667.953
S 0 S 10 S 20 S 30 S 40

HORIZONTAL 1:500 VERTICAL 1:500

NOTES



GENERAL

G1 THIS DRAWING IS A PART OF THE CONTRACT DOCUMENTATION AND DRAWINGS.

G2 ALL MATERIALS AND WORKMEN SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS, AUSTRALIA SPECIFICATIONS AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITY.

G3 THE CONTRACTOR SHALL VERIFY THE DIMENSIONS ON SITE PRIOR TO CONSTRUCTION. DRAWINGS SHALL NOT BE SCALED.

G4 ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.

G5 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

G6 THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.

G7 ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT REGULATIONS AND GUIDELINES.

G8 FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.

G9 MANHOLE COVERS AND SPINDLE BOXES FOR ALL VALVE FITTINGS, GROUND PITS, AIR VALVE PITS AND TEST MANHOLE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL PIPELAYER.

P1 INSULATED BOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLANGED BRANCHES INCLUDING RETICULATION CONNECTIONS, SCOURS AND AIR VALVES.

P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.

P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED WHEN PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.

P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.

P5 THE BECT'S MECH AND ELEC SERVICES BRANCH TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.

Trees

T1 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

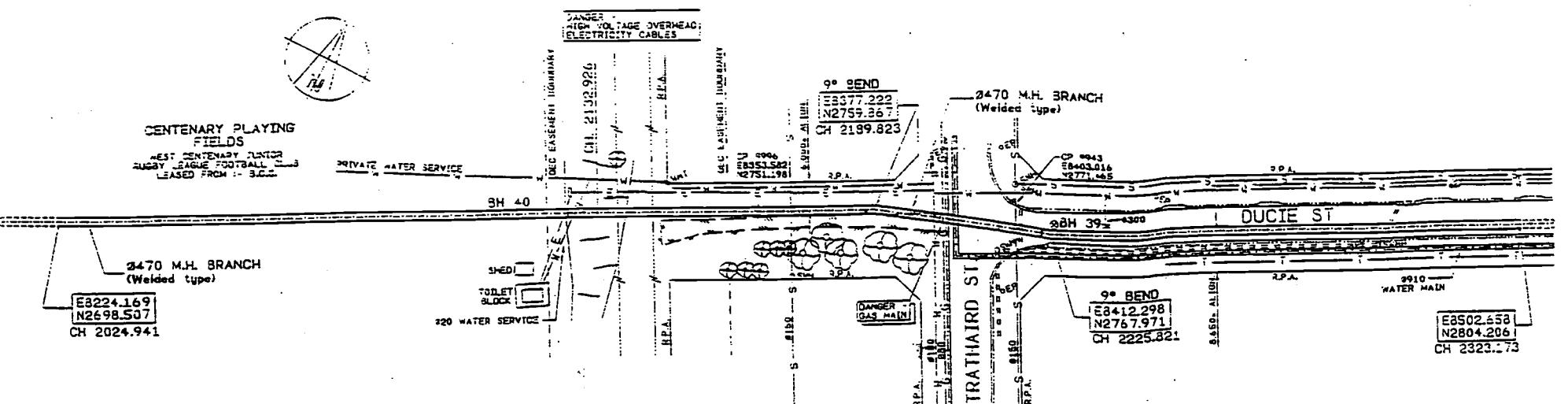
01670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

IMPOSED CURRENT CATHODIC PROTECTION

LONGITUDINAL SECTION
CH. 1667.953 - 2024.941
SCALE HORIZONTAL 1:500
VERTICAL 1:500

A scale bar at the bottom left of the map, showing a horizontal line with tick marks and numerical values from 0 to 25 in increments of 5. Below it is the text "SCALE OF METRES" and "1:500".

NOTES



PLAN

SCALE 1:500

31670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

COMPRESSED CURRENT CATHODIC PROTECTION

SOCKETS FACING
BRISBANE CITY COUNCIL LAND
DEPARTMENT OF RECREATION AND HEALTH
PARKS BRANCH

SOCKETS FACING

SOCKETS FACING —

LONGITUDINAL SECTION

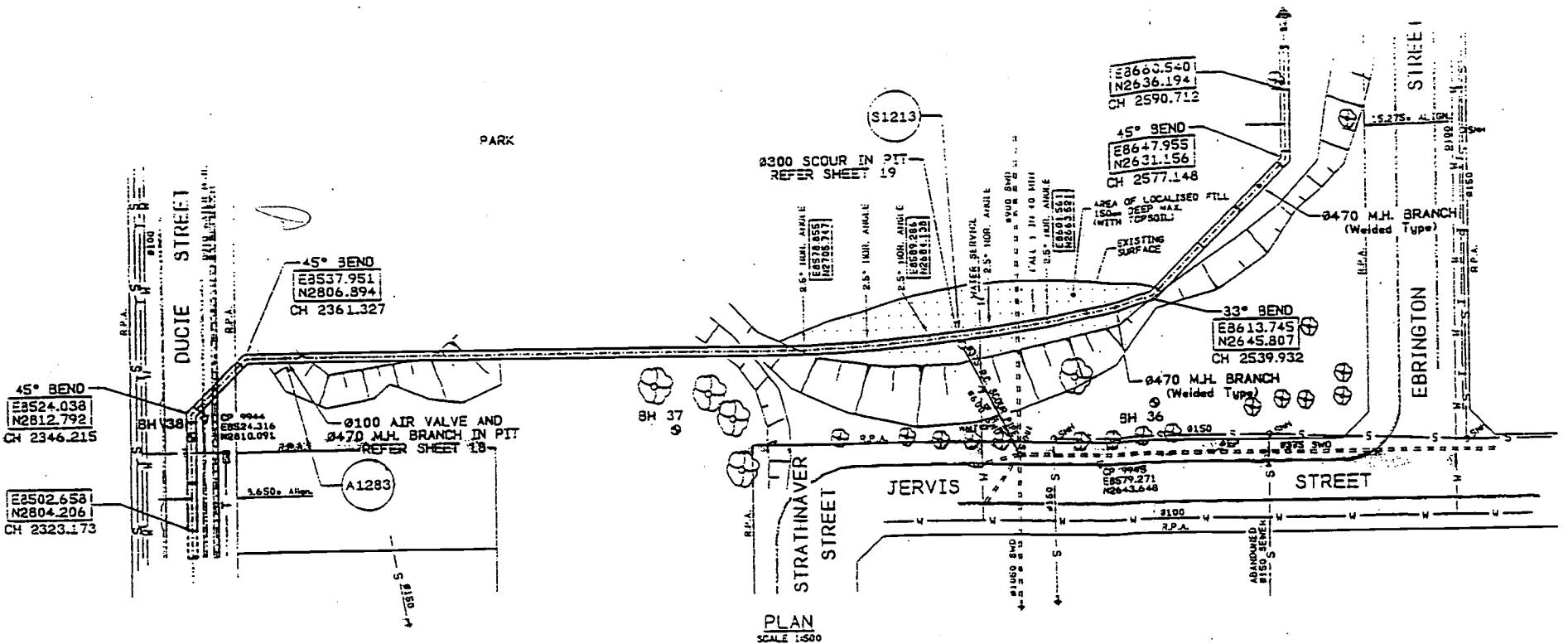
CH. 2024.941 - 2323.173
SCALE HORIZONTAL 1:500
VERTICAL 1:500

SCALE OF METRES
1 : 500

MASTER

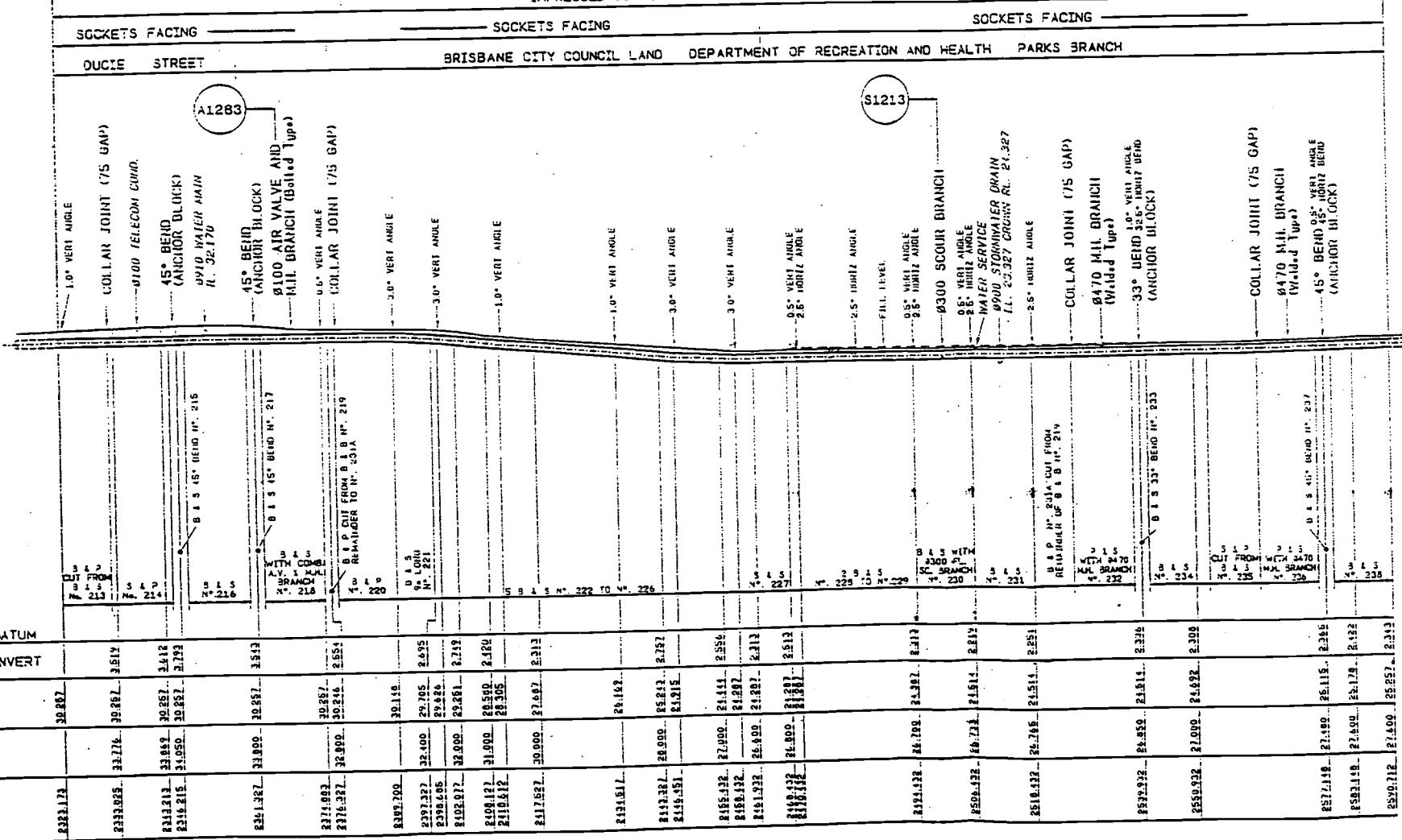
MAIN CONSTRUCTION DETAILS		
DATE COMMENCED	DATE COMPLETED	
SIGNATURE	DATE	
INDICATE AMENDMENT/ISSUE TO SUITE FOR INITIALS		
AMENDMENT & ISSUE REGISTER		
MANAGER	DIRECTOR OF PLANNING & DESIGN	
DATE	DATE	
DIRECTOR OF CONSTRUCTION	DIRECTOR OF M&S SERVICES	DIRECTOR OF SEMI-DIST
DATE	DATE	DATE
DESIGN S.S.C. OCT 4	ENGINEER IN CHARGE	<i>Complaint</i>
DRAWN S.S.C. OCT 4	SUPERVISOR	<i>Re-draw</i>
TRACED	SURVEY NO.	2095
CHKD & MSL DEC 4	RELO BOOK	7974/6
A.H. DATUM	SURVEYED	2.BOXALL
CADD FILE NO.	46W7088	
JOB FILE NO.	(71765/S1258)	
 BRISBANE CITY COUNCIL DEPARTMENT OF WATER SUPPLY & SEWERAGE PLANNING & DESIGN BRANCH		
PROJECT		
MAJOR DISTRIBUTION MAINS		
LOGAN CITY TRUNK MAIN		
AMPLIFICATION		
TITLE		
WACOL TO OXLEY SECTION 1		
1670 DIA. MSCL WATER MAIN		
PLAN AND LONGITUDINAL SECTION		
SCALE AS SHOWN IN 8 OF 20 SHEETS		
DRAWING NO.		AMEND
486/4/6-W7088P		0

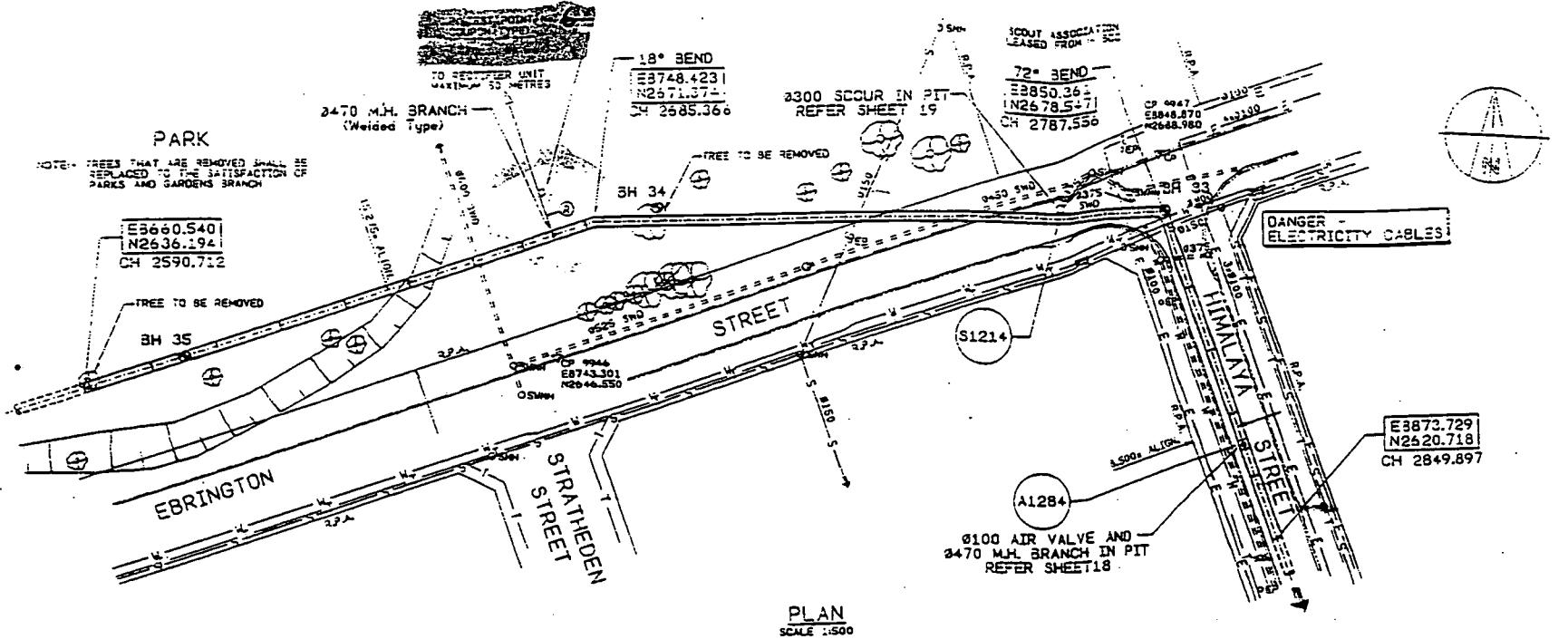
1. THIS DRAWING IS TO BE USED IN CONJUNCTION WITH OTHER DRAWINGS, DOCUMENTATION AND SPECIFICATIONS.
2. MATERIALS AND PROCESSES SHALL COMPLY WITH THE REQUIREMENTS OF THE CURRENT STANDARDS, AUSTRALIA SPECIFICATIONS AND CODES AND THE BY-LAWS OF THE RELEVANT BUILDING AUTHORITIES.
3. THE CONTRACTOR SHALL PROVIDE DIMENSIONS ON SITE PRIOR TO CONSTRUCTION DRAWINGS AS SHOWN.
4. NO DISCREPANCY SHALL EXIST BETWEEN THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
5. NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
6. THE CONTRACTOR SHALL MAKE HIMSELF FULLY CONVERSANT WITH ALL EXISTING SERVICES AND STRUCTURES IN THE AREA AND SHALL NOT DAMAGE THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
7. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE GREENSLANDS WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.
8. FOR DETAILS OF BOREHOLE LOGS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.
9. MANHOLE COVERS AND SPINDEL BOXES, MANHOLE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MANHOLE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL.
- P1. INDICATED BOLT SETS AND SPANNERS FOR MANHOLE COVERS AND SPINDEL BOXES, FOR MANHOLE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MANHOLE PITS, CONNECTIONS, SCOURS AND AIR VALVES.
- P2. UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.
- P3. EXTERNAL COATINGS ARE NOT TO BE REMOVED WHEN PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.
- P4. NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.
- P5. THE SOIL, MECH AND ELEC SERVICES BRANCH TO BE CONTACTED PRIOR TO BACKFILLING AREAS WHERE CATHODIC PROTECTION POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.
10. NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.



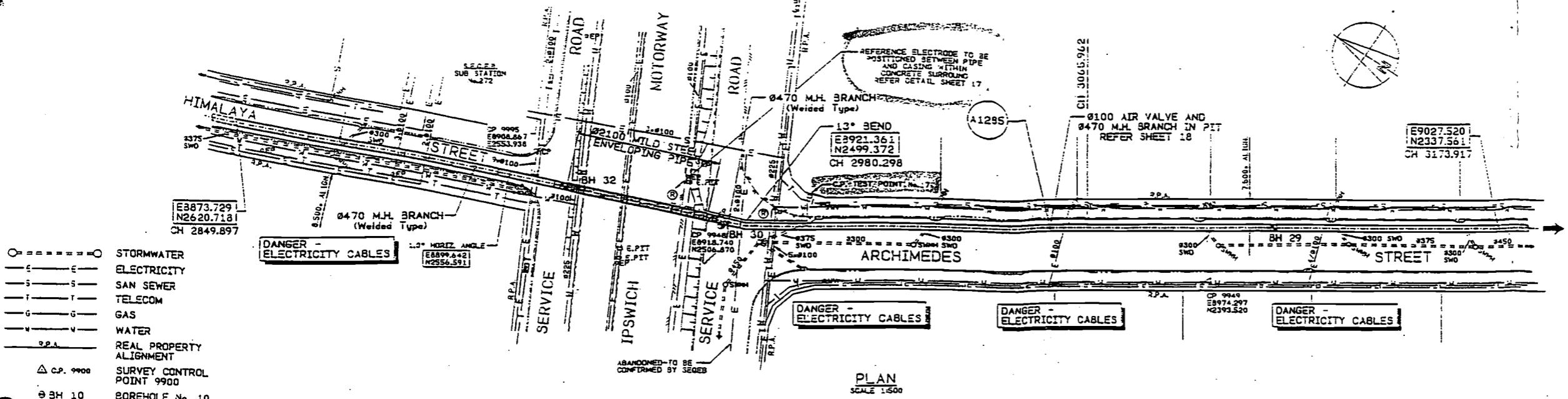
01670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED)

IMPRINTED CURRENT CATHODIC PROTECTION

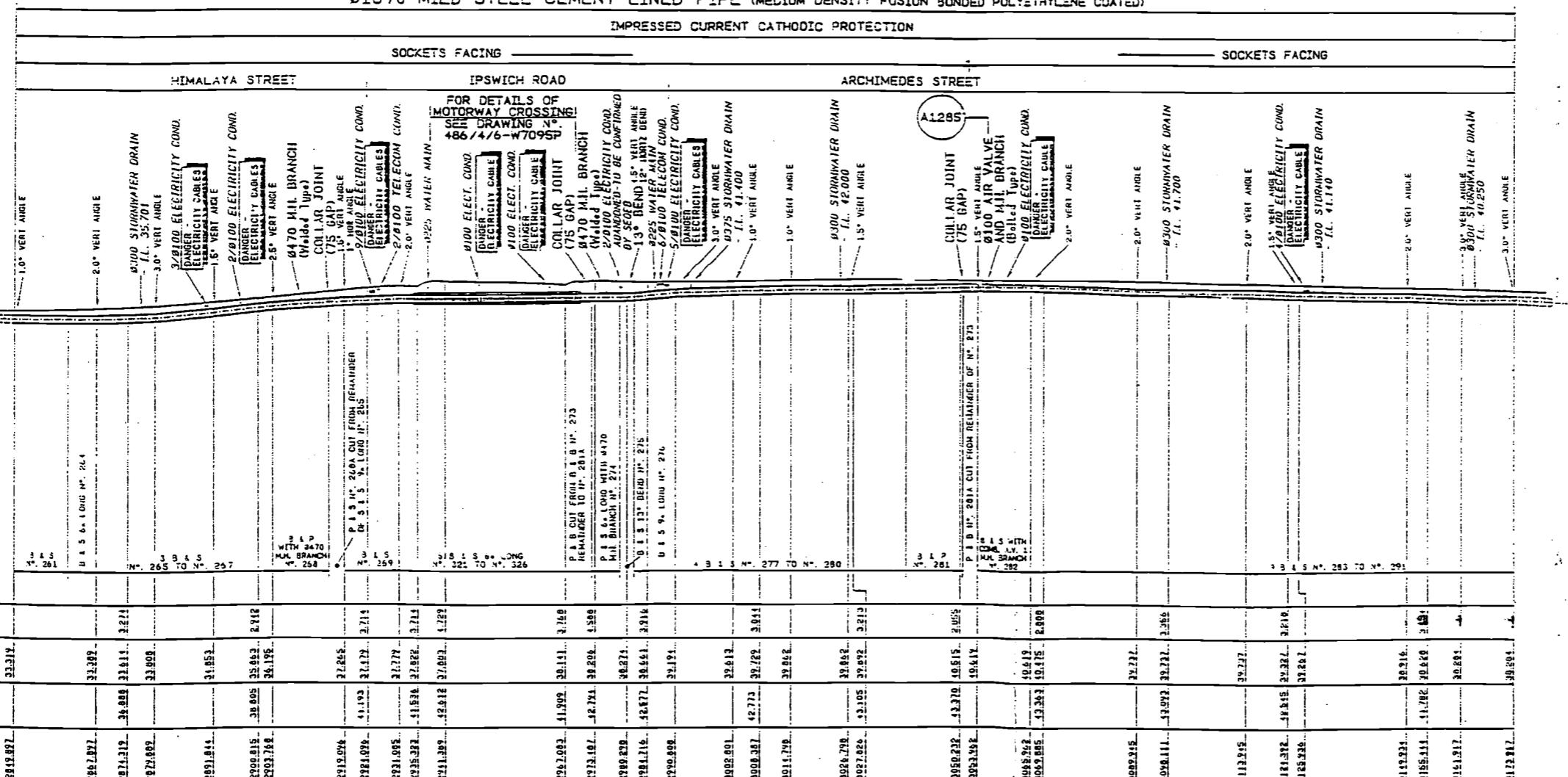




GENERAL:
 G1 THIS DRAWING IS TO BE READ IN CONSTRUCTION WITH OTHER CONTRACT DOCUMENTATION AND DRAWINGS.
 G2 MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT STANDARDS, AUSTRALIA SPECIFICATIONS AND CODES OF PRACTICE AND THE RELEVANT BUILDING AUTHORITY.
 G3 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION. DRAWINGS SHALL NOT BE SCALED.
 G4 ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
 G5 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
 G6 THE CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH ALL EXISTING SERVICES AND STRUCTURES WHETHER ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES AND STRUCTURES DURING THE COURSE OF THE CONTRACT.
 G7 ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.
 G8 FOR DETAILS OF BOREHOLE LOGS REFER TO THE TECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.
 G9 MANHOLE COVERS AND SPINOLE SIZES FOR ALL VALVE PITS, SCOUR PITS, AIR VALVE PITS, BOLTED MANHOLE PITS, SHALL BE SUPPLIED BY THE PRINCIPAL PIPEWORKER.
 P1 INSULATED BOLT SETS AND GASKETS SHALL BE USED AND TESTED FOR ELECTRICAL INSULATION ON ALL FLANGED BRANCHES INCLUDING RETICULATION CONNECTIONS, SCOURS AND AIR VALVES.
 P2 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.
 P3 EXTERNAL COATINGS ARE NOT TO BE REMOVED WHEN PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.
 P4 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.
 P5 THE SCOUR, MEHAL AND ELEC SERVICES SHALL NOT BE LOCATED IN OR NEAR SACKETTING AREAS WHERE CATHODIC PROTECTION TEST POINTS OR OTHER FACILITIES ARE TO BE INSTALLED.
 P6 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.



LEGEND



LONGITUDINAL SECTION

CH. 2848.897 - 3173.917
SCALES HORIZONTAL 1:500
VERTICAL 1:500

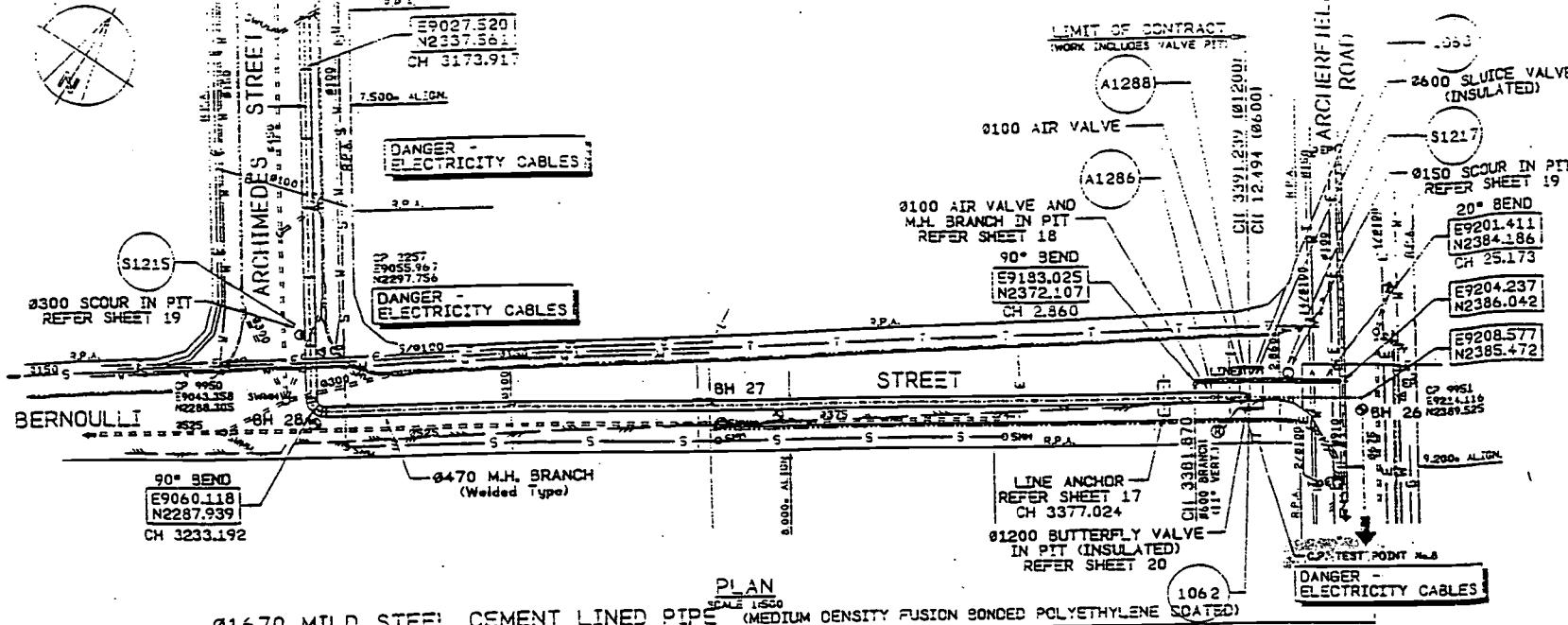
5 10 15 20 25
30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
105 110 115 120 125 130 135 140 145 150 155 160

SCALE OF METRES

1:500

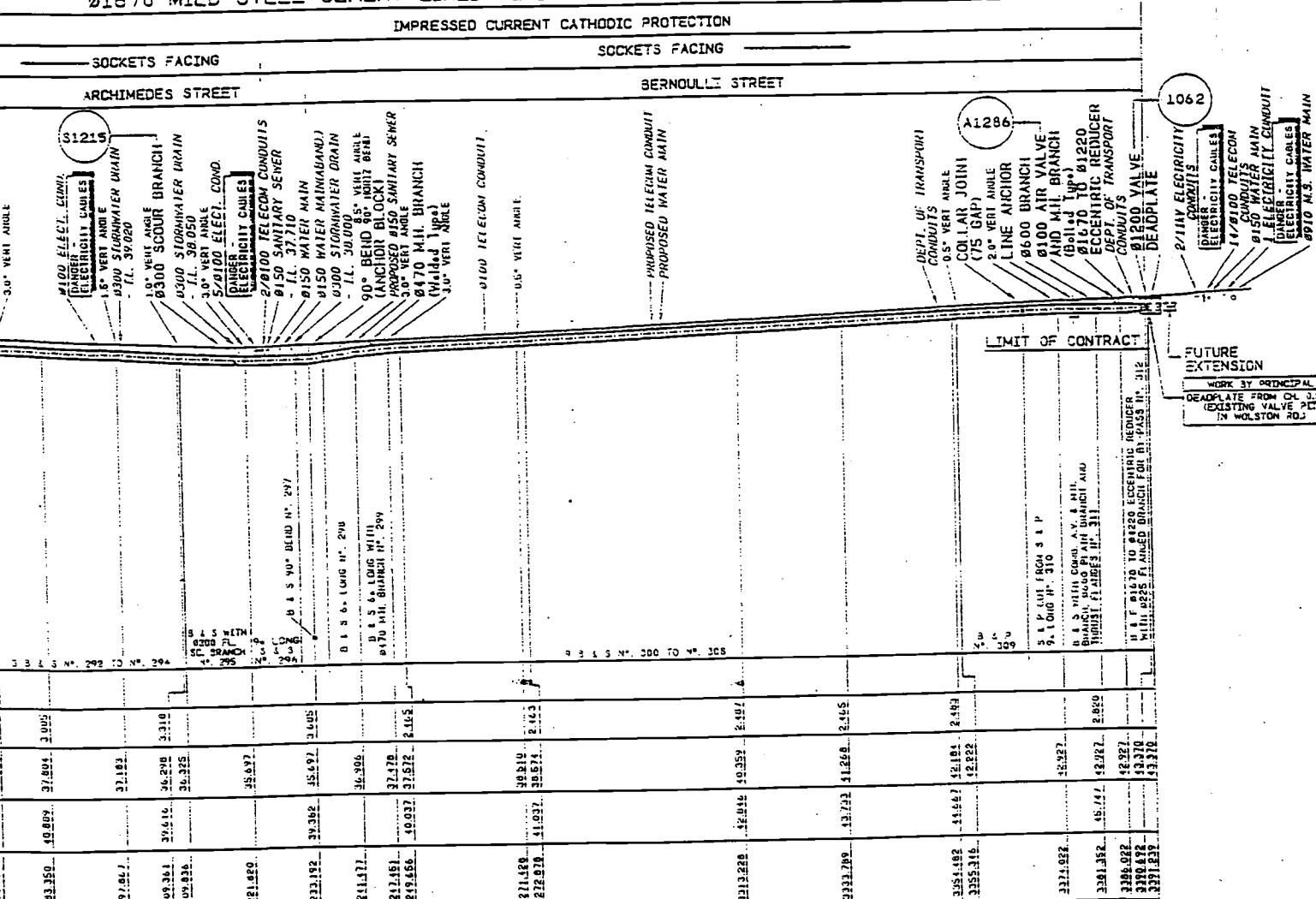
MAIN CONSTRUCTION DETAILS		
DATE COMMENCED	DATE COMPLETED	
SIGNATURE	DATE	
NO DATE AMENDMENT/ISSUE TO ISSUE FOR INITIALS		
AMENDMENT & ISSUE REGISTER		
MANAGER	DIRECTOR OF PLANNING	DESIGN
DATE	DATE	DATE
CONTRACTOR	DIRECTOR OF OPERATIONS	DISTRIBUTION
DATE	DATE	DATE
DESIGN	1.8. OCT '94	ENGINEER IN CHARGE
DRAWN	1.8. NOV '94	SUPERVISOR
TRACED	1.8. NOV '94	ENGINEER
OKD	1.8. NOV '94	SURVEY NO. R095
A.H. DATUM	1.8. NOV '94	FIELD BOOK 7974/6
CADD FILE NO.	46W7091	7974/6
JOB FILE NO.	(7705/S/288)	
BRISBANE CITY COUNCIL		
DEPARTMENT OF WATER SUPPLY & SEWERAGE		
PLANNING & DESIGN BRANCH		
PROJECT	MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION	
TITLE	WACOL TO OXLEY SECTION 1 1670 DIA. MSCL WATER MAIN PLAN AND LONGITUDINAL SECTION	
SCALE AS SHOWN	1:500	11 OF 20 SHEETS
DRAWING NO.	486/4/6-W7091P	AMENDMENT 0

MASTER



01670 MILD STEEL CEMENT LINED PIPE (MEDIUM DENSITY FUSION BONDED POLYETHYLENE COATED) PLAN SCALE 1:500 1062

IMRESSED CURRENT CATHODIC PROTECTION



LONGITUDINAL SECTION
CH. 3173.917 - 3391.239
SCALE HORIZONTAL : 500

5 10 15 20 25
SCALE OF METRES
1:500

LINE A
LONGITUDINAL SECTION

MASTER

30 ³ BELOW A.H. DATUM							
DEPTH TO PIPE INVERT							
INVERT OF PIPE	2024	31641	31606	31606	31606	31606	31606
SURFACE LEVEL							
PIPE CHAINAGE	3221291.7	3221291.9	3221292.1	3221292.3	3221292.5	3221292.7	3221292.9

10 MATERIALS AND WORKMENSHIPS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT STANDARDS, CODES OF PRACTICE, REGULATIONS AND CODES OF PRACTICE FOR THE RELEVANT BUILDING AUTHORITY.

11 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE DRAWINGS TO ANY CONTRACTOR'S DRAWINGS SHALL NOT BE USED.

12 ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERVISOR BEFORE PROCEEDING WITH WORK.

13 NO SUBSTITUTE MATERIALS SHALL BE USED WITHOUT THE APPROVAL OF THE SUPERVISOR.

14 THE CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH ALL EXISTING SERVICES AND STRUCTURES WITHIN AND ADJACENT TO THE SITE OF THE WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE SERVICES OR STRUCTURES DURING THE COURSE OF THE CONTRACT.

15 ALL WOOD SHALL BE CARRIED OUT IN ACCORDANCE WITH THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT, REGULATIONS AND GUIDELINES.

16 FOR DETAILS OF BOREHOLE LOSS REFER TO THE GEOTECHNICAL REPORT CONTAINED IN THE CONTRACT DOCUMENTATION.

17 MAMMOL COVERS AND SPINDLE BOXES FOR ALL VALVE PITS, SCOUR PITS, AIR VALVE PITS, SIGHTED MAMMOL PITS, SHALL BE SUPPLIED BY THE PRINCIPAL.

PIPEWORK

18 INSULATED SOLT SETS AND GASKETS SHALL BE INSTALLED AND TESTED FOR PLUMBING AND INSULATION ON ALL FLANGED BRANCHES INCLUDING RETICULATION CONNECTIONS, SCOURS AND AIR VALVES.

19 UNLESS OTHERWISE INDICATED ANCHOR BLOCKS SHALL BE UNREINFORCED.

20 EXTERNAL COATINGS ARE NOT TO BE APPLIED WHEN PIPEWORK FITTINGS ARE SURROUNDED OR COVERED IN CONCRETE.

21 NO REINFORCEMENT IS TO BE WELDED TO OR MAKE CONTACT WITH THE PIPEWORK.

22 THE 300V, 110V AND ELEC. SERVICES SHALL NOT BE CONTACTED prior to backfilling areas where cathodic protection test points or other facilities are to be installed.

TREES

23 NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE SUPERVISOR.

MAIN CONSTRUCTION DETAILS			
DATE COMMENCED	DATE COMPLETED		
SIGNATURE	DATE		
RECEIVED AMENDMENT/ISSUE TO ISSUE FOR INITIALS			
AMENDMENT & ISSUE REGISTER			
MANAGER	DIRECTOR OF PLANNING & DESIGN		
DATE		DATE	
DIRECTOR OF CONSTRUCTION	DIRECTOR OF M&E SERVICES	DIRECTOR OF SEWAGE	DESIGNERS/WSA'S
DATE		DATE	
DESIGN 1	ENGINEER / M.C. IN CHARGE	10/10/84	
DRAWN 1	DESIGNER	10/10/84	
TRACED 1	SURVEY	R095	
CHECKED 1	RELOD	BOOK	
A.H. DATUM	SURVEYED	R. BOXALL	
CAD FILE NO.	W7092		
JOB FILE NO.	(71705/51258)		
 BRISBANE CITY COUNCIL DEPARTMENT OF WATER SUPPLY & SEWERAGE PLANNING & DESIGN BRANCH			
PROJECT			
MAJOR DISTRIBUTION MAINS LOGAN CITY TRUNK MAIN AMPLIFICATION			
TITLE			
WACOL TO OXLEY SECTION 1 1570 DIA. MSCL WATER MAIN PLAN AND LONGITUDINAL SECTION			
SCALE AS SHOWN		IMF 12 OF 20 SHEET	
DRAWING NO.		AMER	
486/4/6 - W7092P		0	